

AP3 FILE

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APOLLO 7 AIR-TO-GROUND

VOICE TRANSCRIPTIONS

TRANSCRIPTION GUIDE

Speakers in the Apollo 7 Air-to-Ground Voice Transcriptions have been designated according to the following codes:

SPEAKERS

Command module:

CDR	Commander	Walter M. Schirra, Jr.
CMP	Command module pilot	Donn F. Eisele
LMP	Lunar module pilot	R. Walter Cunningham
SC	Unidentifiable crewmember	

Mission Control Center:

CC	Command communicator (CAP COM)	
F	Flight Director (FLIGHT)	
S	Surgeon (surgeon or physician for the specific flight)	

Remote sites:

CT	Communications technician (COM TECH)	
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One hyphen is used to indicate a speaker interrupting himself with another thought and then completing the statement. It is also used to indicate a pause. Two hyphens are used when a speaker does not complete a sentence, is interrupted, or completes a sentence after an interruption. If it was impossible to ascertain missing word(s), three dots have been used to indicate the garbled place.

APOLLO 7 AIR-TO-GROUND VOICE TRANSCRIPTIONS

(GOSS NET 1)

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CAPE KENNEDY through BERMUDA (REV 1)

00 00 00 00 CC Ignition.

00 00 00 01 SC Lift-off and clocks running.

00 00 00 03 CT Roger. Godspeed, Apollo 7.

00 00 00 07 CT Clear of the tower.

00 00 00 11 CDR Roll commence.

00 00 00 13 CT Roger. Roll.

00 00 00 24 CDR Pitch is tracking good.

00 00 00 25 CT Roger. Pitch. You're looking good.

00 00 00 27 CDR Roger.

00 00 00 31 CDR Five thousand, 5 degrees.

00 00 00 40 CDR Roll complete.

00 00 00 42 CT Roger. You're looking real good.

00 00 00 44 CDR Roger. She's running - it's getting a little  
noisy now.

00 00 01 01 CT MARK.

00 00 01 02 CT Mode 1 Bravo.

00 00 01 47 CDR Copy.

00 00 01 49 CT MARK.

00 00 01 50 CT Mode 1 Charlie.

00 00 02 01 CT Apollo 7, you are GO for staging.

00 00 02 03 CDR Roger. We're GO.

00 00 02 59 CT You're looking good, 7.

00 00 03 13 CDR Houston, do you read? Apollo ??

00 00 03 15 CC Roger. Five-five, Wally. You're looking good;  
real fine.

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00 00 03 18 CDR ... I couldn't receive you VHF.

00 00 03 20 CC Okay.

00 00 03 21 CDR Tower jettisoned beautifully; did you read that?

00 00 03 23 CC Yes, we didn't get that, but we got GO.

00 00 03 26 CDR Okay.

00 00 03 29 LMP I'm reading him VHF now, Wally.

00 00 03 31 CDR Okay.

00 00 03 34 LMP I'll count you in on 4 minutes.

00 00 03 36 CDR Okay.

00 00 03 38 CC Trajectory and guidance are GO, Apollo 7.

00 00 03 41 CDR Roger. She looks real good. A little bumpy ride on this stage, but very pleasant.

⊖ 00 00 03 46 CC Real fine.

00 00 03 52 LMP On my MARK, it will be 4 minutes, Wally.

00 00 03 54 CDR Okay.

00 00 03 57 LMP Three, two, one.

00 00 04 00 LMP MARK.

00 00 04 01 LMP Apollo 7, systems are GO.

00 00 04 03 CC Roger. Looking real fine here, Walt.

00 00 04 10 CMP Gimbals are tight.

00 00 04 16 CMP Gimbal check looks very good.

00 00 04 24 CDR This 1 g stuff is great.

00 00 04 28 CC Roger. Copy that.

00 00 04 31 CDR It's right on 1 g.

00 00 05 02 CDR Spacecraft guidance is GO.

⊖ 00 00 05 03 CC Roger. You're looking real good. You're right on.

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00 00 05 07 CDR Roger.

00 00 05 51 CC You're looking real fine, Apollo 7.

00 00 05 54 CDR Roger. She's riding like a dream.

00 00 06 01 CDR Six minutes, and we're really going.

00 00 06 04 CC Roger.

00 00 06 05 CMP This center-window view is sensational.

00 00 06 09 CC You mean you finally got to look after the BPC  
went?

00 00 06 14 CMP Man, that was a real fine ...

00 00 06 18 CMP You'd think they raised a whole circus tent in  
front of us.

00 00 06 21 CC Roger.

00 00 06 32 SC Kind of dark on top, isn't it?

00 00 06 48 CC You're right on the old button.

00 00 06 51 CDE Very good.

00 00 06 58 LMP Apollo 7 is GO at 7 minutes.

00 00 07 00 LMP Omni ...

00 00 07 06 CC You cut out there, Walt. Say again?

00 00 07 08 LMP ...

00 00 07 22 LMP ...

00 00 07 24 CC You're kind of garbled, Walt.

00 00 07 29 CC Apollo 7, Houston. How do you read?

00 00 07 32 LMP Beautiful. How me?

00 00 07 34 CC You're coming in very garbled.

00 00 07 38 CMP Roger ...

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00 00 07 41 CC You're also garbled, Donn. I can make it out;  
you're right on the button, right on the mark;  
you're looking good.

00 00 07 47 CMP Okay ...

00 00 08 05 CDR ... guidance is GO.

00 00 08 08 CC Okay. Copy guidance GO. We copy step press and  
FU shift.

00 00 08 14 CDR ...

00 00 08 18 CDR ...

00 00 08 24 CC You're very garbled, 7. I'll just keep talking  
to you; you're looking real fine.

00 00 08 29 CDR ...

00 00 08 59 CC You're looking real good, Apollo 7.

00 00 09 01 CDR ... in about a minute.

00 00 09 06 CC Roger. Copy.

00 00 09 16 CDR ...

00 00 09 20 CC I couldn't make it out, Wally, but you're  
looking real good.

00 00 09 23 CDR ...

00 00 09 34 CC Apollo 7, Houston. Your trajectory and EMC  
are GO.

00 00 09 39 CDR Beautiful. Roger.

00 00 09 44 CC We have a predicted SECO of 10 plus 20, 10 plus 20.

00 00 09 54 CC MARK.

00 00 09 55 CC Mode 4, mode 4.

00 00 10 08 CC Omni Delta, Apollo 7.

00 00 10 19 CDR SECO!

00 00 10 22 CC Roger. Copy.

00 00 10 26 CDR How do like that ...

00 00 10 28 CMP Man, it felt like something shooting me clean out of the seat.

00 00 10 30 SC Walter, I'll get the gimbals OFF.

00 00 10 34 CMP Pitch 1 OFF, yaw 1 OFF, pitch 2 OFF, yaw 2 OFF.

00 00 10 40 SC All four OFF.

00 00 10 42 SC Beautiful.

00 00 10 46 CMP Roger. Confirm DSKY readouts are velocity 25 553; H-dct is minus four balls 1; and altitude is 122.3.

00 00 10 59 CC Roger. Copy, Apollo 7. We have you GO for orbit, GO for orbit.

00 00 11 15 SC Go ahead, babe.

00 00 11 25 CC Apollo 7, your S-IVB has been safed.

00 00 11 32 CC Apollo 7, Houston. Are you reading?

00 00 11 41 CC Apollo 7, Houston.

00 00 11 47 CMP Let me read these off: apogee 146.4, perigee 122.3, off the DSKY.

00 00 11 57 CC Apollo 7, Houston. We copy you perigee and apogee.

00 00 12 04 CC How are you reading Houston?

00 00 12 21 CC Apollo 7, Houston. Omni Delta, omni Delta.

00 00 12 39 CC Apollo 7, Houston. How are you reading?

00 00 12 42 CC Read you loud and clear, Houston. How are we?  
00 00 12 44 CC You're five-by now, 7. Your S-IVB has been safed.  
Stand by for your orbit.  
00 00 12 50 SC Very good, sir.  
00 00 12 55 CC Apollo 7, Houston. We have you in a 122 by 151  
orbit.  
00 00 13 01 SC That's very good.  
00 00 13 03 CC Not bad shooting, right?  
00 00 13 05 SC That's great.  
VANGUARD (REV 1)  
00 00 14 34 CC Apollo 7, Houston.  
00 00 15 32 CC Apollo 7, Houston.  
00 00 15 55 CC Apollo 7, Houston.  
00 00 16 25 CC Apollo 7, Houston.  
00 00 16 28 SC Going to vent it?  
00 00 16 31 CC Okay. I'll give you a GET time hack at 17 minutes  
and about 20 seconds.  
00 00 16 55 CC Five, four, three, two, one.  
00 00 17 00 CC MARK.  
00 00 17 00 CC 17 minutes GET.  
00 00 17 03 CDR Roger ...  
00 00 17 06 CC Roger. You won't need a CMC lift-off update.  
You're okay there.  
00 00 17 11 CDR Roger ...  
00 00 17 20 CC Apollo 7, say again.  
00 00 17 22 CDR Roger. How are we transmitting?

00 00 17 25 CC Okay. We're reading you about two-by; we're really trying to do some reconfiguring here to get good COMM with you.

00 00 17 33 CDR ...

00 00 17 40 CC I can't make it out, Wally. Stand by.

00 00 17 43 CDR Roger.

00 00 18 42 CC Apollo 7, Houston. How are you reading now?

00 00 18 52 CDR ...

00 00 18 55 CC Okay. You're loud, but very garbled, Wally.

00 00 19 03 CDR Roger.

00 00 19 08 CC All your systems look real good down here.

00 00 19 12 CDR Roger ...

00 00 19 17 CC I couldn't make it out. Do you want select Simplex A?

00 00 19 39 CDR That's land out there. Little island down there that way: can you see it? Walt can, I guess.

00 00 19 48 CC Okay. Apollo 7, Houston. How do you read now?

00 00 19 55 CDR Houston, Apollo 7. How do you read on Simplex A?

00 00 19 58 CC You're real fine now, real fine, Wally, and we've got you coming through on intercom.

00 00 20 04 CDR That's clever.

00 00 20 05 CC Okay.

00 00 20 07 CDR No, we're broadcasting to you.

00 00 20 09 CC Oh, okay. I was just wondering. I couldn't see what you were describing there.

00 00 20 14 CDR We're looking at the Canary Islands.

00 00 20 15 CC Oh, you're making me jealous.

00 00 20 20 CDR Roger. We've completed the insertion checklist with the exception of the four circuit breakers of panels 277 and 278.

00 00 20 27 CC Roger. We copy.

00 00 20 29 CDR He hasn't posted this yet.

00 00 20 33 CT It's loud and clear over here, Jack; good weather report.

00 00 20 37 CC Roger. You're five-by, also.

00 00 20 44 CDR Just deserts.

00 00 22 50 CC Apollo 7, Houston. You have about 2 minutes to LOS, and your Saturn tanks look perfectly nominal.

00 00 22 57 CDR Very good; they feel good.

00 00 22 59 CC Roger, Hoss.

00 00 23 40 CC Apollo 7, Houston. Can you give us an onboard reading of the S-IVB tank pressures?

00 00 23 45 CDR Roger. Oxidizer is at 21; fuel is about 7.

00 00 23 59 CC Roger. We confirm that, Wally. Looks about the same here.

00 00 24 03 CDR Roger.  
TANANARIVE (REV 1)

00 00 40 28 CC Hello.

00 00 40 29 SC This is ... Apollo 7.

00 00 40 33 CC Apollo 7, Houston. How do you read?

00 00 40 41 CDR We read you, CAP COMM. Apollo 7 over Tananarive ...

00 00 40 45 CC Roger, Wally. We're reading you loud and clear.  
How do you read me?  
CARNARVON (REV 1)

00 00 52 46 CDR Houston CAP COMM, Apollo 7 over Carnarvon.

00 00 52 49 CC Roger. Apollo 7, this is Houston reading you  
loud and clear.

00 00 52 54 CDR Roger. Read you the same. We are having a  
ball.

00 00 52 56 CC Roger. We read you loud and clear over Tanana-  
rive, Wally, but evidently you could not read us.

00 00 53 02 CDR Fine, Tom.

00 00 53 03 CC Okay. We have new time for your LOX dump. The  
LOX dump - -

00 00 53 08 CDR Wait a minute. Okay. Go ahead, Tom.

00 00 53 12 CC Roger. The S-IVB dump will occur at 1 plus  
34 plus 27, estimated DELTA-V of 32 feet per  
second.

00 00 53 25 CDR Did you get that, Walt?

00 00 53 27 IMP Roger. 1 plus 34 plus 27, 32 feet per second.

00 00 53 32 CC Roger.

00 00 53 35 CDR Do you read?

00 00 53 36 CC Roger. We got them.

00 00 53 38 CDR Okay. We've completed the postinsertion check-  
list down to where the CMP has to get out of the  
couch. Standing by for your GO/NO-GO.

00 00 53 45 CC Roger.

00 00 53 47 CDR I'd like to give you a little fast report on what we got here.

00 00 53 51 CC Go.

00 00 53 53 CDR The windows appear to be almost crystal clear - which is good news for all of us - and we have very good visibility out of all five windows. And in that center hatch one, there is a drain for monitoring boost.

00 00 54 09 CC Roger.

00 00 54 11 CDR We've noted the airglow here and made some data on it. It looks like it's about 3 degrees thick as we approached Carnarvon - at night, of course. We measured that with a COAS.

00 00 54 26 CC Roger.

00 00 54 27 CDR ... POU's are still at 12 o'clock, ... arrived at 12 o'clock this trip.

00 00 54 35 CC You've seen me before.

00 00 54 37 CDR (Laughter) Roger. ... came into view 3 degrees before the top of the airglow, where that was the surface of the earth.

00 00 54 47 CC Okay.

00 00 54 49 CDR I'll see if Donn and Walt have anything to pass on.

00 00 54 52 CC Okay. Stand by. May want to get you a NAV load right now for the GO/NO-GO. Stand by.

00 00 54 57 CDR Okay.

00 00 55 33 CC Apollo 7, Houston.

00 00 55 37 CDR Go ahead.

00 00 55 39 CC Roger. You have a GO, and guidance would like to send you an update.

00 00 55 46 CDR Roger. Stand by.

00 00 55 52 CDR Roger. We're in BLOCK; will go to ACCEPT on your call.

00 00 55 55 CC Roger. Go to ACCEPT.

00 00 55 58 CDR We are in ACCEPT. Understand we're GO for two one.

00 00 56 01 CC Affirmative.

00 00 56 02 CDR Roger. Jack, I'm observing your rewinded tape dump. We would like to get a good reading on GO/NO-GO on the DSE as soon as you can.

00 00 56 11 CC Okay.

00 00 56 16 CDR Total of LOX dump was 1 plus 34 plus 27, 32 feet per second.

00 00 56 22 CC Roger. We copy. Okay. It's coming up.

00 00 57 41 CC Apollo 7, Houston. The load is in, has been verified; the computer is yours.

00 00 57 48 CDR Very good.

00 00 59 47 CC Apollo 7, Houston. One minute LOS Carnarvon; we pick you up Honeysuckle S-band almost immediately.

00 00 59 56 CDR Okay. Jack, Donn is taking off his suit now; Walt's and mine are still on. We get an O<sub>2</sub> FLOW HI when Donn opens up the suit, and we analyze that as the suit rate trying to catch up to the cabin, so we are GO.

HONEYSUCKLE (REV 1)

00 01 00 12 CC Okay. We copy.

00 01 00 15 CDR Okay. Jack, we've got the suit flow valve off now, and the O<sub>2</sub> flow is dropping down.

00 01 00 22 CC Okay. We copy.

00 01 00 25 CDR No problem; it's just that we haven't seemed to be able to stop at the right thing.

00 01 00 30 SC Hey, Jack, are they going to be able to get the tape recorder rewound before we get LOS?

00 01 00 35 CC Stand by.

00 01 00 38 CDR ... for 6 minutes.

00 01 00 43 CC Okay. Apollo 7, Houston. We got the tape recorder rewound over the Canaries. We will do a dump over MILA.

00 01 00 55 CDR Roger.

00 01 01 04 LMP We would like to have a reading of just what you got on that tape, because we were talking on it continuously. ...

00 01 01 12 CC Okay. Will do. We'll do that over the state-side pass, Walt.

## HUNTSVILLE through VANGUARD (REV 1)

00 01 24 23 CT Huntsville AOS.

00 01 24 29 CC Apollo 7, Houston.

00 01 24 41 CC Apollo 7, this is Houston through the Huntsville.  
How do you read?

00 01 25 08 CC Apollo 7, Houston. How do you read?

00 01 25 21 CC Hello, Apollo 7, Houston. How do you read?

00 01 26 52 CT Apollo 7 copied you loud and clear. Apollo 7  
copied you loud and clear. Go ahead, and we'll  
relay.

00 01 27 00 CC Roger. Apollo 7, this is Houston CAP COMM.  
Understand you are reading. Go ahead and relay  
through the Huntsville the S-IVB tank pressures;  
and again just to remind you, call program 47  
prior to the LOX dump.

00 01 28 20 CDR Houston, Apollo 7. Do you read?

00 01 28 22 CC Roger, Apollo 7. Reading you loud and clear. ...

00 01 28 26 CDR Okay. The readings are 24-24, 13-13.

00 01 28 31 CC Roger. Twenty-four and 13, Wally. Now reading  
you loud and clear.

00 01 28 34 CDR Now we are turning on both A and B, and I have  
that logged.

00 01 28 37 CC Roger.

00 01 28 39 CDR ... couch.

00 01 28 41 CC Roger. Did you get me transmitting in the blind  
over the Huntsville, Wally?

00 01 28 46 CDR I don't think so. What was that, Tom?

00 01 28 48 CC Well, I just - to read the tank pressures and to call program 47 prior to LOX dump.

00 01 28 55 CDR Roger. We have that data. I have tank pressures at 1 plus 15, 1 plus 50 if you are ready to copy.

00 01 29 06 CC Roger. We got it.

00 01 29 09 CDR 23-23, 8 then 8. That's 1 plus 06.

00 01 29 34 CC Apollo 7, Houston. You faded out completely. We'll contact you over California in a couple of seconds.

00 01 29 40 CDR Roger. ... data is logged.

00 01 32 35 CC Apollo 7, Houston.

00 01 32 37 CDR Roger, Houston. Just coming over Baja California.

00 01 32 40 CC Roger. Everything looks good on the IVB back there, and you're GO for the dump.

00 01 32 45 CDR Okay.

00 01 32 47 CC And also for the data, they plan to dump the DSE over MILA, and we'll have a real fast evaluation on the voyage.

00 01 32 54 CDR Okay. Looks like Guaymas is working pretty hard down there; we can see it. Tell me when you get that data on the S-IVB now.

00 01 33 07 CC Apollo 7, Houston.

00 01 33 08 CDR Go ahead.

00 01 33 10 CC You might tell Walt, what they did is they  
rewound the tape recorder over Canary, and if  
he has any additional voice that he wants to  
place on, he can place it on there now. They'll  
dump it again over MILA.

00 01 33 26 CDR Roger. Thank you.

00 01 33 27 CC Okay. They didn't get your remarks on booth  
because they rewound it over Canary, Walt, per  
the flight plan.

00 01 33 40 LMP Okay. Well, all meter readouts were normal, and  
I did list them individually on the insertion  
text, and it's on the tape, and that's about  
the best we can do.

00 01 33 57 CC Okay. And we're standing by for the dump  
shortly.

00 01 34 01 CDR Roger.

00 01 34 10 CDR It's a fantastic world up here.

HUNTSVILLE through VANGUARD (REV 2)

00 01 35 02 CC Apollo 7, Houston. We're reading your DSKY;  
looks like you're getting some DELTA-V.

00 01 35 06 CDR Okay.

00 01 38 54 CC Apollo 7, Houston. The dump appears to be  
proceeding normally.

00 01 38 58 CDR Good.

00 01 42 52 CC Apollo 7, Houston. Cold helium dump is initiated.

00 01 42 58 CDR Roger.

00 01 43 48 CDR Houston, Apollo 7. I have a PPO<sub>2</sub> for you. I'm reading 165.

00 01 43 54 CC Roger. A PPO<sub>2</sub> at 165.

00 01 43 58 CDR Roger.

00 01 44 15 LMP Houston, Apollo 7. Our cabin PRESS now is being - very rapidly it seems to me, we're down to about 5.5.

00 01 44 25 CC Roger. 5.5 on the cabin.

00 01 47 43 CDR Houston, Apollo 7.

00 01 47 49 CDR Houston, Apollo 7.

00 01 47 56 CDR Houston, Apollo 7.

00 01 47 59 CC Apollo 7, go.

00 01 48 01 CDR Roger. Could you verify that the S-IVB pass position is complete?

00 01 48 05 CC Okay. Stand by, Wally.

00 01 48 08 CDR I can stop program 47.

00 01 48 12 CC Roger. The passivation is complete, and you can terminate 47.

00 01 48 18 SC Roger. You have our readout on the DSKY?

00 01 48 21 CC We got it.

00 01 48 23 CDR Okay. We won't bother logging it. We're waiting for an update on NAV stars for program 52.

( )

00 01 48 30 CC Roger.

00 01 48 32 CC We're working on it right now.

CANARY (REV 2)

00 01 52 18 CC Apollo 7, Houston through Canary.

00 01 52 21 CDR Roger, Jack. Loud and clear.

00 01 52 23 CC Your stars for your P52 are stars number 2 and stars number 4.

00 01 52 34 CDR Roger. Number 2 and 4. Thank you.

00 01 52 57 CDR Roger. Here are the numbers; we have trouble pronouncing words ourselves.

00 01 53 01 CC Say again.

00 01 53 03 CDR Roger. Here are the numbers; we have trouble pronouncing the words ourselves.

00 01 53 08 CC Yes.

00 01 53 27 CDR We are preparing to jettison the optics cover shortly.

00 01 53 30 CC Okay.

00 01 53 57 CDR Jack, for the record, our DELTA-V counter read 33 feet per second.

00 01 54 01 CC Okay. We got it all in the - that was the DELTA-V counter?

00 01 54 07 CDR Affirmative.

00 01 54 08 CC Okay.

00 01 54 10 CDR We do a RESET now?

00 01 54 14 CC Yes.

( )

00 01 54 47 CC Apollo 7, Houston.

00 01 54 50 CDR Go ahead, Houston.

00 01 54 52 CC Roger. MILA reports your DSE voice quality on the dump was very good.

00 01 54 58 CDR Oh, good deal. That really helps.

00 01 57 01 CC Apollo 7, Houston.

00 01 57 04 CDR Go ahead, Jack.

00 01 57 05 CC Roger. One minute LOS Canary. We've computed a leak rate; we find it to be one half of spec value.

00 01 57 15 CDR Very good.

00 01 57 23 CDR The optics covers are jettisoned. Donn is tracking them.

00 01 57 28 CC Roger.. Real good.

00 01 58 10 IMP Jack, let's get the ... temperatures ... much better around 70 ever since lift-off. I've never seen ... on what kind of ... expect them to do that ... couple of hours you'll get by ... that's all.

00 01 58 32 CC Okay. Apollo 7, Houston. I couldn't copy that, Walt; you're down very low.

00 01 58 42 SC Going up.

00 01 59 00 CDR Did you set the cutoff ...

00 01 59 02 SC Roger.

00 01 59 08 CC I didn't copy it, either. The SPS tank TEMP's, I think. Isn't that what you got?

00 01 59 25 CC I thought it was the SPS tank TEMP's. Didn't you?  
TANANARIVE (REV 2)

00 02 12 12 CC Apollo 7, this is Houston through Tananarive.  
How do you read?

00 02 12 18 CDR Loud and clear, Tom.

00 02 12 19 CC Roger. We're getting a lot of background noise  
on the HF coming in ... here, but you're coming  
in loud and clear.

00 02 12 26 LMP Roger. You are putting through a lot of echo,  
but you are quite readable. We just ran through  
an Orion constellation, so we're very pretty.

00 02 12 36 CC Roger. How do the stars look through both the  
telescope and sextant compared to the simulator?

00 02 12 43 LMP A little bit better.

00 02 12 47 CC Roger.

00 02 12 49 LMP The Orion constellation came out ...

00 02 12 55 CC Real good. Okay. We're going to give you a  
time hack at 40 minutes to go till separation  
in about 2 minutes.

00 02 13 04 CDR Roger. I'll reset my dial.

00 02 13 07 CC And we have a GET for the pitchdown maneuver  
and the inertial maneuver. Do you want to copy  
it?

00 02 13 14 CDR Stand by. Roger. Tom, at ... clock we go ahead,  
and we have a blank for GET ...

00 02 13 25 CC Okay. GET of pitchdown is 2 plus 42 plus 55;  
GET of inertial attitude, 2 plus 51 plus 10.

00 02 13 40 CDR Pitchdown at 2 plus 42 plus 55, and inertial  
at 2 plus 51 plus 10. And ... the SEP.

00 02 13 53 CC Roger. We're going to give you a 40-minute  
hack counting down so you can set your watch.

00 02 13 59 CDR Okay. I'm all set here, Tom.

00 02 14 00 CC All right.

00 02 14 30 CC Thirty seconds to go.

00 02 14 33 CDR Roger.

00 02 14 55 CC Five, four, three, two, one.

00 02 15 00 CC MARK.

00 02 15 01 CC Forty minutes, counting down for SEP.

00 02 15 03 CDR Roger. Over here.

00 02 15 04 CC Roger.

00 02 15 10 CDR We're going to try talking to you, and we'll  
let you copy.

00 02 15 14 CC Go ahead.

00 02 15 21 CDR Roger. First, we'll read off balls ... 0693  
minus two balls 12 plus three balls 23 plus  
00186; star difference angle was four balls 2.

00 02 15 42 CC Roger.

00 02 15 45 CDR We had a terrible time ...

00 02 16 09 CC Apollo 7, Houston. What was your star angle  
difference? That's the only one we were  
questioning.

00 02 16 13 CDR Four balls 2.

00 02 16 16 CC Not bad.

00 02 16 17 SC ... Go on to another ...

00 02 16 22 CC Roger.

00 02 16 28 CDR We've got a real nice clean cabin here; very  
few particles floating around.

00 02 16 34 CC Sounds good.

00 02 16 35 CDR There are two very small particles ...

00 02 16 47 CC Okay.

00 02 16 51 CDR If we follow one more, we'll give it a cup of  
coffee.

00 02 16 53 CC (Laughter)

00 02 18 44 CC Apollo 7, Houston. You are 1 minute to LOS  
Tanarive; we will pick you up at Carnarvon  
in about 8 minutes.

00 02 18 50 CDR Roger. ... got four balls 1 in circuit ...

00 02 18 55 CC Okay.

00 02 18 59 CDR ... two balls 22 plus four balls 6 plus four  
balls 1. This is the second go-around on the ...

00 02 19 08 CC Roger. Sounds good.

CARNARVON (REV 2)

00 02 27 16 CC Apollo 7, Houston.

00 02 27 18 CLR Go ahead.

00 02 27 19 CC Roger. You won't need a state vector update.  
I guess Donn did so good there - and you are  
GO for your S-IVB takeover.

( )

00 02 27 35 CDR Roger.

00 02 27 37 CC And, Wally, after you get through with the S-IVB control test there, let me know when you ARM your LOGIC, and we'll take a look at it and give you a GO for PYRO ARM.

00 02 27 52 CDR Okay, Jack.

00 02 28 48 LMP Houston, Apollo 7.

00 02 28 50 CC Go ahead.

00 02 28 51 LMP We turned both cabin fans off about an hour ago because the noise is really terrific, and we just put one back ON again to circulate some air, but the noise from both cabin fans is way up there.

00 02 29 06 CC Okay. We copy.

00 02 30 54 CC Apollo 7, Houston.

00 02 31 01 CDR Roger, Houston. Go ahead.

00 02 31 03 CC Wait, Wally. I'm sorry; we'll wait till you get through with this before we take over here.

00 02 31 07 CDR Roger. We're right in it.

00 02 31 09 CC I'm sorry.

00 02 32 04 CDR The S-IVB is working very well, and we're now pitching up.

00 02 32 11 CC Stop.

00 02 32 12 CDR Did you get ... the stop?

00 02 32 16 CC Roger. We copy.

( )

00 02 32 19 CDR Three, two, one.  
00 02 32 21 CDR MARK.  
00 02 32 22 CDR Minus roll ...  
00 02 32 24 CC And that's about ...  
00 02 32 25 CC Ninety degrees.  
00 02 32 27 CDR Up for 5 degrees.  
00 02 32 28 CDR Three, two, one.  
00 02 32 30 CDR MARK.  
00 02 32 32 CDR That's right on.  
00 02 32 33 CC Next will be thrust roll for 5 degrees. Three,  
two, one.  
00 02 32 40 CC MARK.  
00 02 32 41 CDR Roger. Coming back in.  
00 02 32 45 CC It's standing very well.  
00 02 32 47 CDR That's about five-tenths ...  
00 02 32 48 CC Three, two, one.  
00 02 32 50 CC MARK.  
00 02 32 52 CDR Very good.  
00 02 32 54 CC Minus yaw for 3 degrees.  
00 02 32 56 CDR Okay.  
00 02 32 58 CC Three, two, one.  
00 02 33 00 CC MARK.  
00 02 33 02 CDR Minus yaw, and that's three-tenths.  
00 02 33 03 CC Three, two, one.  
00 02 33 10 CC MARK.  
00 02 33 11 CDR Right on it.

00 02 33 12 CDR Touch off at 3 degrees. Three, two, one.

00 02 33 20 CC MARK.

00 02 33 21 CDR Roger. Coming on it.

00 02 33 25 CDR There's much cross-coupling with this thing.

00 02 33 28 CC Three, two, one.

00 02 33 30 CC MARK.

00 02 33 31 CC S-IVB test complete.

00 02 33 35 CDR Beautiful.

00 02 33 36 CC Real fine; outstanding. You want to hit your logic down so we can lock at that?

00 02 33 48 SC Second logic ON. LOGIC ON.

00 02 33 52 CC Okay. We copy. And after Carnarvon here, which we'll lose you in about 2 minutes, we are going to do some remoting through ARIA to get - complete this DTO.

00 02 34 03 CDR Very good. Okay. S-IVB ...

00 02 34 12 CC Okay.

00 02 34 14 CDR Interesting sideline: When the ...

00 02 34 20 CC Okay. Apollo 7, you're GO for PYRO ARM.

00 02 34 24 CDR There you are.

00 02 34 26 CDR JV ARM.

00 02 34 29 CDR We can see on the night side, the APS thrusting on the S-IVB.

00 02 34 34 CC How so?

00 02 34 36 CC As a rule, flight's just like Gemini?

00 02 34 39 CDR It's a pretty big blob of light; it's sort of a yellow-orange light.

00 02 34 45 CC Roger.

00 02 34 47 CDR Okay. Pick up again.

00 02 34 49 CC This is Apollo 7. When you are dumping some of our tapes, we'll be going live on some of these things to make sure we've got complete coverage.

00 02 34 55 CDR Okay.

00 02 34 59 CC Direct RCS ON.

00 02 35 03 CDR That's ON.

00 02 35 06 SC Control RCS. BMAG modes all on RATE 2.

00 02 35 14 CDR RATE 2. SCS channels.

00 02 35 15 SC Four of them ON. Manual attitude, three of them at RATE COMMAND.

00 02 35 25 CDR RATE COMMAND on three. Tape recorder - RECORD. That's the ... stand by for their ... on that ... TDC servo power, AC 1, main A. Circuit breakers EDS, three of them closed. RCS LOGIC both closed: verified. EDS power ON. Okay. DELTA-V counter is zeroed.

ARIA 2 (REV 2)

00 02 36 10 CC ARIA 2, go REMOTE.

00 02 36 16 CC We called for GET to be reset here.

00 02 36 31 CC ARIA 2 has two-way lock; ARIA 2 has two-way lock.

00 02 36 41 CC Apollo 7 through ARIA. How do you read?

00 02 36 45 CDR Damn good, Jack; how are you?

00 02 36 47 CC ...

00 02 36 52 CC Okay. Wally, ARIA 2 has us for about 10 minutes

here; then we'll pick up ARIA 3 for about another 10 minutes.

00 02 37 00 CDR Very nice ...

00 02 37 05 CC Do you think you'll like those ARIA's there?

00 02 37 17 CDR Jack, can you verify that the tape recorder will record for us, and we'll go to high bit rate for the S-IVB maneuver?

00 02 37 24 SC Okay. Stand by.

00 02 37 28 CDR We're running through ARIA; you going to want me 'to go to high bit rate?

00 02 37 42 CC Okay. Apollo 7, EECOM tells me they will control it for SEP.

00 02 37 50 SC Understand. You will control it for SEP.

ARIA 3 (REV 2)

00 02 40 42 CC Hello, Apollo 7. This is Houston through ARIA 3. How do you read?

00 02 40 47 CDR Very good.

00 02 40 55 CC Apollo 7, this is Houston through ARIA 3. Over.

00 02 40 59 CDR ...

00 02 41 05 CC Roger. We can read you about one-by, Wally.

00 02 42 18 CC Apollo 7, Houston through ARIA 3. How do you read now?

00 02 42 23 SC ...

00 02 42 25 CC Roger. You're now coming in about three-by-three.

00 02 45 19 CC Apollo 7, Houston. How do you read now?

00 02 45 34 CC Apollo 7, Houston through ARIA 3. How do you read?

00 02 45 50 SC ...

00 02 45 55 CC Apollo 7, Houston.

00 02 47 20 CC Apollo 7, Houston. How do you read through ARIA 3?

00 02 47 26 SC ...

00 02 47 28 CC Okay. Wally, you're about three-by. We have the PAD for the phasing maneuver. We'll send it up to you or give it to you through a ... whenever you are ready for it. We are not in any hurry, but whenever you are ready for it.

00 02 47 45 SC ...

00 02 48 34 SC ... LOS ...

HAWAII (REV 2)

00 02 53 50 CC Apollo 7, Houston.

00 02 53 53 CDR Go ahead.

00 02 53 55 CC Roger. Through Hawaii. Minus 1 minute till SEP.

00 02 54 22 CDR Houston, Apollo 7. Are we recording high bit rate?

00 02 54 26 CC Affirmative, Apollo 7.

00 02 55 08 CDR Did you hear that on the ground?

00 02 55 11 CC No. You're saying it was loud, right?

00 02 55 15 CDR Loudest sound heard round the world.

00 02 55 17 CC Okay. We confirm. SLA's up.

00 02 56 07 CDR I can see a thruster firing action in daylight.

00 02 56 12 CC Roger. Copy.

00 02 57 04 CDR I can see little tiny particles out the right-hand window way down; looks like pieces of chaff. I would assume that came from the separation of the S-IVB.

00 02 57 12 CC Roger. I understand.

00 02 57 26 CDR I assume that she is still there then. Tom,  
we've got same old split ... when we pitched  
out.

00 02 57 32 CC Okay. Looks like you are going straight in.

00 02 57 38 CDR Same ... It's absolutely beautiful here, and we  
got a lot of loose particle chaff sitting at  
about -

00 02 57 45 SC Look at them!

00 02 57 49 LMP Chaff seems to be oriented mostly between  
3 o'clock and 5 o'clock from my point of view  
here in the right seat and between 9 o'clock  
and 12 o'clock. The other two quadrants are  
relatively clean; and the SLA panel at the top,  
left, and bottom are opened at - I would guess  
to be about a 45-degree angle, and the SLA  
panel on the right is just opened maybe  
30 degrees at the very best.

00 02 58 16 CC Roger. Looks like you are looking at a four-  
jawed angry alligator.

00 02 58 28 CDR It's a bigger one, Tom.

00 03 01 28 CC Apollo 7, Houston. Go ahead and get the EDS  
power switch OFF if you want to.

HUNTSVILLE (REV 2)

00 03 01 56 CC Apollo 7, Houston.

00 03 02 05 CC Hello, Apollo 7. This is Houston. Over.

00 03 03 47 CC Hello, Apollo 7, Houston. How do you read?

00 03 03 54 CC Roger.

00 03 04 04 CC Apollo 7, Houston. Over.

00 03 04 06 CDR Roger. Houston, go. Apollo 7.

00 03 04 08 CC Roger. Everything going okay?

00 03 04 11 CDR Yes, just fine. We've got a ... out there about a couple or 300 feet.

00 03 04 15 CC Okay. You might check your EDS power switch OFF, if you want to.

00 03 04 21 CDR Switch is OFF. Have you got any kind of update for us for the SEP maneuvers?

00 03 04 29 CC Roger. We sure do. Are you ready to copy it?

00 03 04 31 CDR Stand by for about 10 seconds.

00 03 04 35 CC Roger. Give me a call when you are ready.

00 03 04 48 CDR Apollo 7. Go ahead with your update.

00 03 04 50 CC Roger. It's a phasing maneuver, 003 20 all balls  
NOUN 82 NA 1641 plus 1224 00057 32538 NOUN 48 NA  
zero plus 16; and roll, pitch, and yaw are 183,  
299, 002, remarks: SEF, heads down, retrograde  
minus X thrusters. You should be in your retro-  
attitude by 3 plus 16 plus 30.

00 03 06 03 CDR Roger. Understand. Upgrade for SEP maneuvers,  
003, 20, 00, 1641, plus 1224, 00057, down retro-  
grade minus X thrusters. You should be in your  
retroattitude by 3 plus 16 plus 30.

--- CDR Roger. Understand update for SEP maneuver  
 003 20 00, 1641, check 1224 00057 32538. NOUN  
 48 now on schedule; roll, pitch, and yaw 183,  
 299, 002. SCS heads down, retro, and use minus  
 X structures.

--- CC Roger. I copied, but I didn't get your pitch;  
 but I want to give it to you again. That's 299  
 for the pitch.

--- CDR Roger.

00 03 06 55 HTV Huntsville LOS.  
 GOLDSTONE through VANGUARD (REV 2)

00 03 07 14 CC Apollo 7, Houston.

00 03 07 32 CC Hello, Apollo 7, Houston.

00 03 07 37 CDR Houston, go.

00 03 07 38 CC Okay. We expect some nonpropulsive venting up  
 near the front end of the S-IVB between 3 plus  
 08 and 3 plus 09. The booster will make a retro-  
 grade maneuver at 3 plus 16 plus 55.  
 GOLDSTONE through VANGUARD (REV 3)

00 03 08 01 CDR Roger. Understand nonpropulsive venting between  
 03 08 and 03 09, and the booster will be retro-  
 venting at 03 16 55.

00 03 08 12 CC Roger. That's when the maneuver will be com-  
 manded. You should be able to see it maneuver  
 around.

00 03 08 25 CC Apollo 7, Houston. Confirm that your TVC serve

power number 1 is OFF.

00 03 08 32 CDR It is OFF.

00 03 08 33 CC Roger.

00 03 08 34 CDR ...

00 03 09 18 LMP There is quite a small-type debris still inside  
the S-IVB. Is that GO?

00 03 09 29 CC Roger. Copied that.

00 03 09 31 LMP Seems to be coming out. That's probably the  
vent.

00 03 09 38 CC Okay.

00 03 10 32 LMP All the internal structure looks just fine.  
There is one set of cords that's running around -  
one set of cords running around that seems to  
be going to a panel that didn't open too far.

00 03 10 48 CC Okay. Get some pictures.

00 03 13 38 CDR We have got - Ponchartrain in the back of the  
S-IVB. I can see the bridge right across it.  
We should have a - unfortunately, it's too cloudy  
for us to look at, Tom, but New Orleans looks  
good.

00 03 13 54 CC Roger. Understand you can see New Orleans.

00 03 13 56 CDR Roger. We got a shot of the ... across the lake  
cutting about.

00 03 14 01 CC Roger. Good show.

00 03 14 41 CDR Looks like the entire US is cloud covered until  
you get over here, though.

00 03 15 36 SC We're looking right down at the Cape. We can  
get a picture of it in the background.

00 03 15 40 CC Roger. You got a picture of them over the Cape  
in the background.

00 03 15 42 SC The Cape's not clear.

00 03 15 44 CC Roger.

00 03 15 45 CDR Now it's starting to clear.

00 03 15 56 CC Roger. You on top of the booster this time, Wally?

00 03 15 58 CDR Say again.

00 03 15 59 CC You on top of the booster?

00 03 16 01 SC ... we got some real great stuff here.

00 03 16 04 CC Good show. Okay. In about a minute, the booster  
should start its retrograde maneuver.

00 03 16 10 CDR The booster is - engine is set up facing down  
toward the Atlantic Ocean - to straight down.  
We're pointing straight down.

00 03 16 19 CC Okay.

00 03 16 25 CDR Got a very slow rate going on the booster.

00 03 16 31 CC Okay.

00 03 16 34 CDR Except for that one panel, everything looks like  
it's just as you'd expect it to be on that S-IVB  
SLA deployment.

00 03 16 42 CC Okay. Sounds real good.

00 03 16 49 CC Okay. We've got about 3 minutes to go to the  
phasing maneuver, and are you all set up for  
the roll, pitch, and yaw?

00 03 16 58 CDR We've ... and roll, and we ... attitude shortly.

00 03 17 03 CC All right.

00 03 17 45 CC Apollo 7, Houston.

00 03 17 47 CDR Yes.

00 03 17 48 CC Roger. Our - GNC just confirmed that inertial pitch attitude is 299 degrees.

00 03 18 55 CC Okay. I'll give you a MARK at 60 seconds: two, one.

00 03 19 00 CC MARK.

00 03 19 01 CC T minus 60 seconds; minus 30 seconds; 10 seconds.

00 03 19 29 CDR We're in complete.

00 03 19 32 CC Roger.

00 03 19 33 CDR Roger.

00 03 22 49 CC Apollo 7, Houston.

00 03 22 55 CDR Houston, 7.

00 03 22 56 CC Roger. You can go ahead and terminate program 47 if you want to.

00 03 23 00 CDR Roger. We have terminated. We are trying to get a few more pictures after we set; we have made the burn one-tenth of a foot per second ...

00 03 23 07 CC Roger. That's real good; thank you.

00 03 23 20 CDR Tom, we had P47 running there a couple of minutes early, and we picked up about a foot and a half per second and registered two. I guess you can pick that up on your downlink; you

might have somebody consider whether they want to re-do the state vector or not.

00 03 23 35 CC Okay. Good. Look, we're gonna have you at Ascension in just a couple of minutes, and we'd like to get a PPO<sub>2</sub> reading.

00 03 23 43 CDR Okay. Stand by.

00 03 23 48 CC And also, what was your closest point of approach, Wally, to the IVI?

00 03 23 53 CDR For about 4 or 5 feet, Tom.

00 03 23 55 CC Roger. Four or 5 feet.

00 03 24 01 SC ... We're a little worried to get backed up in there with that one cocked panel, to drop things off.

00 03 24 08 CC Roger.

ASCENSION (REV 3)

00 03 31 01 CC Apollo 7, Houston through Ascension.

00 03 31 05 CDR Go ahead, Houston.

00 03 31 07 CC Roger. We're standing by for your PPO<sub>2</sub> reading.

00 03 31 24 CDR Roger. Our PPO<sub>2</sub> is reading 18 - oh, about 182 - 180, I guess.

00 03 31 3 CC Roger. Copy 182. Apollo 7, Houston. Could you read us out your reading for cabin pressure?

00 03 32 01 CDR Roger. Cabin pressure is down to 5.2, I'd say - something like that.

00 03 32 08 CC Okay. Copy. Thank you.

## TANANARIVE (REV 3)

00 03 47 12 CC Apollo 7, Houston through Tananarive. Standing by.

00 03 47 40 CC Apollo 7, Houston through Tananarive. Standing by.

## CARNARVON (REV 3)

00 04 02 29 CC Apollo 7, Houston through Carnarvon.

00 04 02 32 LMP Roger. Loud and clear.

00 04 02 34 CC You are loud and clear, also.

00 04 02 36 LMP Houston, this is Apollo 7. I checked converter 3 on main B in AC bus 2; all phases normal. I checked converter 3 on main A, AC 1; all phases normal. To commence the ECS redundant component check, we need your cooperation for the manifold pressure readout.

00 04 02 58 CC Roger. We copy.

00 04 03 20 LMP If you are ready on the ground, we are going to start checking our main regulator.

00 04 03 27 CC Okay. Apollo 7, Houston. We are ready to copy.

00 04 03 38 LMP Main regulator D valve CLOSED. Emergency cabin pressure valve to one. Emergency cabin push-to-test pushbutton PUSH. O<sub>2</sub> FLOW vent HI. Can you give us a reading on the manifold pressure?

00 04 04 10 CC Roger. 105.

00 04 04 13 LMP Thank you. Main regulator D valve OPEN; main regulator A valve CLOSED. Emergency cabin

pressure valve to 2. Emergency cabin push-to test pushbutton PUSH. Okay. It's working. How about a readout on this one?

00 04 04 36 CC 104.

00 04 04 38 LMP Roger. 104. Main regulator A valve OPEN, Donn

00 04 04 43 CMP Roger.

00 04 04 44 LMP Emergency cabin valve CLOSED.

00 04 04 56 CMP And we intend to ... our secondary radiators when we get that far on this list.

00 04 05 02 CC Roger. Copy.

00 04 05 06 CDR We went a long period of time here with tape voice and data phone. I think it would be good if we go over the horizon, and you don't get that thing back into an operating mode; let us know if you can.

00 04 05 19 CC Roger.

00 04 05 26 CDR We're absolutely counting on being able to record this data on the tape.

00 04 05 31 CC Okay.

00 04 06 13 CC Okay. Apollo 7, Houston.

00 04 06 17 CDR Go.

00 04 06 18 CC Roger. We're not going to be able to finish the dump here over Carnarvon, so you'll still be barber pole to Hawaii. We'll finish the dump at Hawaii then.

00 04 06 31 CDR Roger. Understand. And in some cases, it would

seem that it would be desirable for us to go ahead and hit COMMAND RESET and get that tape moving forward. So in order to avoid any confusion in dumping or in writing all this stuff you haven't dumped, please let us know.

00 04 06 46 CC Okay. Will do.

00 04 07 03 CC Apollo 7, we're standing by for your PYRO A and B volts checks.

00 04 07 10 CDR Roger. We've pulled the circuit breaker; it was reading 37 volts before we pulled each one.

00 04 07 15 CC Okay. Batt C voltage.

00 04 07 20 CDR PYRO A, 37; PYRO B, 37; and PYRO A sequence A and PYRO B sequence B circuit breakers are out.

00 04 07 27 C Okay. Batt C voltage.

00 04 07 32 CDR Batt C's reading 37. Do you read 37?

00 04 07 40 CC All right; understand. Inverter phase voltages.

00 04 07 45 SC All inverter phase voltages are nominal. I will call nominal at 115 plus or minus 2.

00 04 07 50 CC Roger. Copy.

00 04 07 52 CDR Redundant inverter phase voltages all nominal also.

00 04 07 55 CC Okay.

00 04 10 06 CC Apollo 7, Houston. One minute LOS Carnarvon, and we have ARIA coverage here for another 10 minutes.

00 04 10 15 CDR Roger. We are GO here.

## ARIA 3 (REV 3)

00 04 11 00 CC ARIA 3, go REMOTE.  
00 04 11 25 CT ARIA 3, ARIA 3. ...  
00 04 11 32 CC Apollo 7, Houston through ARIA 3.  
00 04 11 48 CC Apollo 7, through - Houston through ARIA.  
00 04 12 27 CC Apollo 7, Houston through ARIA. Standing by.  
00 04 13 24 CT ARIA 3 to ...  
00 04 13 44 CC Apollo 7, Houston through ARIA 3.  
00 04 15 00 CC Apollo 7, Houston through ARIA 1. Standing by.  
00 04 15 17 ARIA 1 ...  
00 04 15 35 ARIA 3 ARIA ...  
00 04 17 06 CC ARIA 3 ...

## HAWAII (REV 3)

00 04 28 32 CC Apollo 7, Houston CAP COMM through Hawaii.  
00 04 28 40 CDR Roger, Houston.  
00 04 28 43 CC We're standing by.  
00 04 28 45 CDR Aloha.  
00 04 28 48 CC Aloha. Reading you loud and clear.  
00 04 29 01 CC Apollo 7, Houston.  
00 04 29 04 CDR Go ahead, Thomas.  
00 04 29 05 CC Roger. Reading you loud and clear here. How's everything going?  
00 04 29 10 CDR Very good. We're finishing off our first meal; I've had my first space cup of coffee.  
00 04 29 15 CC You're eating the breakfast drink?  
00 04 29 18 CDR They can't take it away from me, now.  
00 04 29 21 CC Roger. Okay. Over the States this time, you're

going to get the NAV load, the state vector load, and also the REFSMMAT.

00 04 29 30 CDR Roger.

00 04 29 34 CC Later on, then, we'll call you up a maneuver pad for the 5 dash 4 maneuver, for NAV check, and also for data for that DTO on the day-night retro check.

00 04 29 44 CDR Very good.

00 04 35 08 CC Apollo 7, Houston. Forty seconds to LOS. We will have a - about a 3-minute loss of COMM here since the Huntsville lost the voice. We will pick you up over California about 38.

00 04 35 23 CDR Roger.  
HUNTSVILLE through ANTIGUA (REV 3)

00 04 36 43 CC Apollo 7, Houston CAP COMM through to Huntsville.  
How do you read?

00 04 37 16 LMP We can read you S-band. Go ahead.

00 04 37 19 CC Okay. Five-by, Walt. We just wanted to make a voice check through Huntsville.

00 04 37 27 LMP Okay. Jack, if we have made all of these good voice checks, I would like to catch up here a little bit on our food.

00 04 37 33 CC Sure.

00 04 40 30 CC Apollo 7, Houston. If you will go to uplink to ACCEPT, we will give you - send you the state vector target load and REFSMAT.

00 04 40 57 CDR Houston, check.

00 04 41 01 CC Roger. We got it. Coming up.

00 04 41 28 CDR Ready to copy the maneuver PAD whenever you have it.

00 04 41 32 CC I don't.

00 04 41 32 CC I don't have it yet, Walt. Stand by.

00 04 41 45 LMP Jack, you can tell Chuck Arthur we've got a washer for him.

00 04 41 49 CC Say again.

00 04 41 58 CC Okay. I understand you have a washer for him.

00 04 42 00 LMP That's correct. We got some for Huey, Peters, and Cochran.

00 04 42 09 CC Okay.

00 04 42 26 LMP We'll try to give you some more back.

00 04 42 55 CC Okay.

00 04 42 57 LMP You understand they did the tumble test in the plan?

00 04 43 03 CC Roger.

00 04 44 50 CDR Magazine M. Frame 50.

HUNTSVILLE through ANTIGUA (REV 4)

00 04 45 00 DR Houston, at this time, at 04 44 32, we have shot frame 50 on S0368 magazine M.

00 04 45 17 CC Okay.

00 04 45 21 DR We had to call those out to you in real time; we can't record right now.

00 04 45 24 CC All right.

00 04 45 43 CDR Houston, for the EMS bias check, add 1.6 feet per second in 5 minutes. Over.

00 04 45 54 CC Roger. How many feet per second in 5 minutes, Wally?

00 04 45 57 CDR ... six.

00 04 46 00 CC Roger. Understand, six.

00 04 46 03 CDR Negative. Unity six.

00 04 46 05 CC Roger. Got it.

00 04 46 12 CDR That's on the DELTA-V time.

00 04 46 14 CC Roger, Wally.

00 04 46 53 CC Apollo 7, Houston. All three NAV loads are in and verified. We are ready to pass up your maneuver PAD.

00 04 47 07 CDR Ready to copy. Go.

00 04 47 08 CC Okay. 6 dash 4 008 59 0843 minus 03194 plus all balls plus 03953 1530 minus 0370 04970 32460 minus 086 minus 030 0 plus 24 45 3590 332 008 17 all balls minus 2687 minus 03376 1631 180 180 000.

00 04 48 23 CDR Roger. Do you still read, Houston?

00 04 48 24 CC I read you five-by..

00 04 48 25 CDR Okay. Readback follows: 6 dash 4 008 59 0843 minus 03194 plus five balls plus 03953 1530 minus 0370 04970 32460 minus 086 minus 030 024 45 3590 332 008 17 0000 minus 2687 minus 03776 1631 180 180 000. Over.

00 04 49 07 CC Roger. There's a correction on your NOUN 43 longitude; that should be minus 03376.

00 04 49 18 CDR Minus 03376. Roger.

00 04 49 21 CC Okay. And I'm ready on your manual retro attitude update.

00 04 49 26 CDR Send 'em up.

00 04 49 34 CC On your remarks, Walt: for your six dash four update there, star check is not visible after 08 plus 40 plus 00.

00 04 49 49 CDR Roger. 08 40 00 before then.

00 04 49 54 CC Roger.

00 04 49 59 CC And let me know when you're ready to copy that S 20.9 manual retro update.

00 04 50 04 CDR Ready to copy. Go.

00 04 50 05 CC Okay. Read the - from top to bottom 6 plus 10, 6 plus 50; roll 179-180, pitch 138-341, yaw 360-359. The first one is a day; second one is a night.

00 04 50 35 CDR Okay. Now I'll read back right across the top line: 6 plus 10, roll 179, pitch 138, yaw 360 day; second one is 6 plus 50, roll 180, pitch 241, yaw 359, night. Over.

00 04 50 52 CC Roger. That's got it.

00 04 51 38 CC Apollo 7, the phasing maneuver that we did will put us 82 miles in front tomorrow for the rendezvous.

00 04 51 47 CDR Roger. I understand. Eighty miles in front tomorrow.

00 04 51 49 CC Eighty-two.

00 04 51 50 CDR Eighty-two miles.

00 04 53 01 CDR Houston, Apollo 7.

00 04 53 03 CC Go ahead.

00 04 53 04 CDR You've had a report on our constellation Orion already, have you not?

00 04 53 10 CC No, I've had no affirmative report.

00 04 53 13 CDR No strain; it worked well.

00 04 53 15 CC Okay. Real fine.

00 04 53 17 CDR ...

00 04 53 19 CC Roger.

00 04 53 33 CC Apollo 7, Houston.

00 04 53 34 CDR Go ahead.

00 04 53 35 CC Roger. G&N say we are getting close to gimbal lock.

00 04 53 39 CDR We have an eyeball on it.

00 04 54 05 CDR We don't seem to be generating any IVA maneuvers that the spacecraft's responding to.

00 04 54 12 CC Roger, Wally. One thing we're interested in: how is Donn doing down in the LEB with respect to working the NAV gear? Do you have any trouble for a position?

00 04 54 20 CDR At about two GDI's, that's all.

00 04 54 25 CC Understand, 13.

( ) 00 04 54 28 CDR The floor doesn't seem to hold me down very well, and it may be because of the strip that's in the hose that keeps carrying me toward the other end; so I'll find out a little better, I think, after I get the suit off later, if I do that.

00 04 54 40 CC Okay.

00 04 54 41 CDR And the PPO<sub>2</sub>: I gave that to you at 04 40, and it was 165.

00 04 54 47 CC Roger. We copied that. What about the PIPA bias check?

00 04 54 53 CDR We had to stop that when we took your update; we'll start another one shortly.

00 04 54 56 CC Okay. Real fine.

00 04 54 58 CDR Good.

00 04 55 08 CDR For your information, we have finished one meal.

00 04 55 13 CC Copy. One meal.

00 04 57 44 CC Apollo 7, Houston. Opposite omni.

00 04 58 19 CC Apollo 7, Houston. We are through with the computer; you can go to BLOCK on the UPTEL switch if you'd like.

00 04 58 25 CDR Roger. BLOCK.

00 04 58 34 CC We're doing our secondary coolant loop check now.

00 04 58 37 CC Okay.

00 04 59 20 CC You're about 30 seconds from LOS; we will pick

you up over Ascension in about 6 minutes.

## ASCENSION (REV 4)

00 05 07 51 CC Apollo 7, Houston through Ascension. Standing by.

00 05 07 57 CDR Roger. We were noticing a little bit of fogging on the hatch window.

00 05 08 05 JC Roger. Copy.

00 05 08 07 CDR And we've taken a couple of pictures of it. ... apparently all right.

00 05 08 16 CC Okay. Copy that.

00 05 08 21 LMP We're flowed the secondary radiators and temperature came down right smartly. We've turned on the secondary cool lift pump, and it's OFF; and the glycol aft outlet temperature came right on down, overshoot to about 35 and seems to be controlling around 40. There was depressure 12.

00 05 08 42 CC That sounds real good, Walt.

00 05 08 48 CMP Fogging on the center hatch windows on the ...

00 05 09 00 CMP Checking condensation.

00 05 09 33 CDR Temperature is staying about, oh, call it 55, make it 65; and the glycol evap outlet temperature climbed right on up to, oh, 58, something like that. Makes me wonder about the mixing valve working.

00 05 09 48 CC Roger.

00 05 13 08 CC Apollo 7, Houston. About 40 seconds to LOS  
Ascension; we'll pick you up in about  
18 minutes over Carnarvon.

00 05 13 20 SC Roger.  
TANANARIVE (REV 4)

00 05 24 44 CC Apollo 7, Houston through Tananarive.

00 05 25 41 CC Apollo 7, Houston through Tananarive.  
CARNARVON (REV 4)

00 05 38 46 CC Apollo 7, Houston through Carnarvon.

00 05 38 50 CDR Roger. Loud and clear.

00 05 38 51 CC Roger. Loud and clear, also. 7, when you  
went over the hill, we found your secondary  
cooling loop was working satisfactory, and  
everything looked good on the primary loop,  
also.

00 05 39 08 CDR Roger. We concur.

00 05 39 10 CC Okay.

00 05 39 12 IMP Did our secondary radiator again. We should  
not have to pull it again for the rest of the  
flight. The egress began - ECS redundant  
component check was completed satisfactorily.  
I still feel like there's slightly anomalous  
behavior there on the mixing valve possible on  
the primary loop. The glycol evap outlet temper-  
ature was running at 58 when I turned off the  
evaporator.

00 05 39 40 CC Roger. Copy. Walt, John Aron is shaking his head.

00 05 39 49 LMP Roger. We did check the glycol EVAP TEMP end valve on the cooling panel, and it was a MIN heat, so there's not much more that can be done there.

00 05 40 00 CC Roger.

00 05 40 57 CC Apollo 7, Houston.

00 05 40 59 CDR Go ahead.

00 05 41 01 CC Walt, we just want to talk over on that primary loop. Was the primary loop running when you read the 58 degrees; was it in operation when you read an EVAP OUT of 58 degrees?

00 05 41 14 LMP When I first read it, it was not pumping, but then it still was at 58 till I turned the evaporator on. There wasn't a great deal of time there between when I turned the pumps back on on the primary loop and went to EVAP, so maybe it just didn't get a chance to settle down.

00 05 41 33 CC That might be. Okay.

00 05 41 44 CC Your primary loop is working okay now, Walt?

00 05 41 49 LMP That's affirmative.

00 05 41 51 CDR It's working very fine since lift-off. I would - I estimate we've been boiling to some extent most of the time.

00 05 41 59 CC Okay.

00 05 42 02 LMP We've run through urine dump operations twice, and it seems to be dumping fine, so far.

00 05 42 09 CC Okay. Real fine.

00 05 42 15 CMP Jack, this is Donn. I completed that alignment at the beginning of this pass. I used Navi and Alpheratz, and we had five balls on the star difference, and I went through to fine align just to be sure. On the coarse align, we had about half a degree and 2 and 1/2 degrees on the gyro torque and angle.

00 05 42 40 CC Okay. Copy, Donn.

00 05 42 46 LMP Do you want to go ahead with the hydrogen purge check heater coming on at 05 50?

00 05 42 52 CC Roger.

GUAM (REV 4)

00 05 50 26 CC Apollo 7, Houston through Guam.

00 05 50 29 CDR Roger. Read you loud and clear.

03 05 50 32 CC You're five-by.

00 05 56 20 CC Apollo 7, Houston. One minute LOS Guam.

00 05 56 24 CDR Roger.

00 05 56 25 CC And, Wally, we're planning - because of - we had this COMM problem during launch; we would like to do a VHF Duplex B check over stateside pass, sometime after you do the day retro test, and we'll talk you all through it.

00 05 56 43 CDR Okay.

00 05 56 47 CC We'll just do it one time only, and that's it.

00 05 56 50 CDR Roger.

HAWAII (REV 4)

00 06 03 51 CC Apollo 7, Houston through Hawaii.

00 06 03 54 CDR Roger.

00 06 03 58 CC Wally, we would like to have you do a PO - PPO<sub>2</sub> check whenever you get a chance, the reason being that the second one was a little shaky.

00 06 04 10 CDR ... Roger. It was the same as the one before. We were using the elbow that bleeds the cabin down in order to vent the unit line, and we end up not purging the cabin there for a period of about one rev, and now I am reading about 170 mm. I got another little problem here. The O<sub>2</sub> flow has gone high about, oh, 3 minutes ago; it's still pegged on high.

00 06 04 46 CC Roger. Copy. Copy PPO<sub>2</sub> 172.

00 06 07 23 CDR Roger. At 6 hours 7 minutes into the mission, I took the magazine M frames 53 and 54: a tropical storm.

00 06 07 35 CC Roger. We copy.

00 06 08 30 CC Apollo 7, Houston.

00 06 08 34 LMP Houston, Apollo 7.

00 06 08 35 CC Roger. Walt, we are concerned about that O<sub>2</sub> flow high. Have you still got it? And if so

are you starting it through the malfunction procedure?

00 06 08 45 IMP That's affirmative. And I'm on page 52 - about 42 here, the cabin seems to be holding high - I mean holding fine; it's normal. I have switched to REDUNDANT, cycled the accumulator with no effect, and I have cycled several times each water accumulator ON and OFF.

00 06 09 06 CC Roger. We copy.

00 06 09 43 CDR ...

00 06 10 49 CC Apollo 7, Houston. Are you calling?

00 06 10 50 CDR That's affirm.

00 06 10 59 CC Houston, Apollo 7. Go ahead.

00 06 11 00 CC Stand by.

?

HUNTSVILLE through ANTIGUA (REV 4)

00 06 11 27 CC Okay. Houston, Apollo 7, this is Houston. You're over the Huntsville how, Wally; do you read? The voice data is coming in very garbled. We'll pick you up loud and clear over California in just about a minute.

00 06 14 23 CDR Houston, Apollo 7. Over.

00 06 14 25 CC Roger. Apollo 7, Houston. Read you five-by.

00 06 14 29 CDR Roger. That's your trend data shown on cabin pressure? We show it holding. Do you show it increasing at all?

00 06 14 39 CC Roger, Apollo 7. We show it holding also, not

increasing.

00 06 14 43 CDR Thank you.

00 06 15 33 CC Apollo 7, Houston.

00 06 15 35 CDR Go ahead, Houston.

00 06 15 37 CC Roger. Your COMM was garbled over the Hurtsville, Wally; and you were trying to read down today retro check. Didn't that fix go okay?

00 06 15 45 CDR Negative.

00 06 15 46 CC Roger.

00 06 15 47 CDR Say, have them call in these times.

00 06 15 49 CC Okay.

00 06 15 51 CDR And all, at 6 hours 10 minutes 22 seconds. Was the bottom of the lines on the canthrin, and was the COAS set at 31.7, also? Matched up perfectly, at 134.7 degrees in pitch.

00 06 16 17 CC Okay.

00 06 16 19 CDR I'd like to revalidate that time.

00 06 16 26 CC Okay.

00 06 16 28 SC Like to revalidate that time.

00 06 16 32 CC Okay. We got that data.

00 06 17 12 CDR Roger. It is flush from 3 degrees, but we should do better.

00 06 17 26 CC Instead of 138.

00 06 17 32 CDR Say again.

00 06 17 46 CC I am sorry, Wally. That was my error.

00 06 18 06 CDR Roger. What's with the end of eight?

00 06 18 29 CC Well, we read you up 138. We are just going through it now, trying to find out what the difference is.

00 06 18 44 CDR 3.3 degrees.  
HUNTSVILLE through ANTIGUA (REV 5)

00 06 20 12 LMP Houston, Apollo 7. Any ideas on the O<sub>2</sub> FLOW HI? We are still bleeding the cabin out. It doesn't seem like that could possibly account for that much, but that is the only leak we can account for.

00 06 20 23 CC Walt, we are still going through it.

00 06 20 25 CC Right now, we are kind of thinking it is a sensor failure.

00 06 20 35 CC We will take a look at it a little bit further as we go along and let you know.

00 06 20 42 LMP Roger.

00 06 24 43 SC Six hours and 24 minutes into the flight, I took frames 55 and 56 on magazine M looking at several islands in the ocean.

00 06 24 57 CC Roger. Copy.

00 06 26 02 CC Apollo 7, Houston.

00 06 26 04 CDR Go ahead.

00 06 26 06 CC Roger. On the O<sub>2</sub> flow problem: we've looked it over pretty well. We can't see anything that would cause high O<sub>2</sub> flow. Surge tanks

holding well, cabin is not increasing, so we kind of had the feeling it's probably a sensor failure.

00 06 26 22 CDR Roger.  
00 06 26 23 CC And we have some corrections on that manual retroattitude, the one you are going to do at 6 plus 50.  
00 06 26 31 CDR Roger. Go ahead.  
00 06 26 33 CC Okay. It is pitch attitude. Pitch attitude should be 339, and yaw attitude should be 000.5.

ASCENSION (REV 5)

00 06 44 19 CC Apollo 7, Houston through Ascension.  
00 06 44 34 CC Apollo 7, Houston.  
00 06 44 36 CDR Go ahead, Houston.  
00 06 44 37 CC Roger. Wally, we're still showing a good cabin, and everything seems to be holding fine on the ECS there.  
00 06 44 45 CDR Looking good.  
00 06 44 50 CC You are about 1 minute LOS Ascension. Will pick you up at Tananarive.  
00 06 44 55 CDR Roger.  
00 06 46 06 CDR Houston, Apollo 7. Over.  
00 06 46 08 CC Apollo 7, go ahead.  
00 06 46 11 CDR May I have an orbital update first chance you get?  
00 06 46 16 CC Apollo, would you repeat? You're garbled.

00 06 46 20 CDR Requesting orbital map update first chance you  
get, please. Over.

00 06 46 23 CC Roger. Will do.  
TANANARIVE (REV 5)

00 06 58 12 CC Apollo 7, Houston through Tananarive.

00 06 58 20 CDR Houston, do you read? Apollo 7.

00 06 58 22 CC I read you five-by. How me?

00 06 58 25 CDR Read you the same. Check we are right on  
earth limb. The airglow is 2.8 degrees thick  
during that check. The COAS is a better -

00 06 58 54 CC Apollo 7, Houston. You faded on that last one,  
after the comment about the COAS.

00 06 59 12 CC Apollo 7, Houston.

00 06 59 37 CC Apollo 7, Houston.

00 07 01 15 LMP Houston, Apollo 7.

00 07 01 17 CC Apollo 7, Houston. We read you five-by, now.

00 07 01 21 LMP Roger. I assume you are monitoring my purge  
and -

00 07 01 25 CC Roger. I understand you're making a fuel cell  
purge.

00 07 01 28 LMP Roger. Check it out.

00 07 01 33 CC I didn't get it, Walt; say again.

00 07 01 36 LMP I'm in the midst of a fuel cell purge. I've done  
one on hydrogen fuel cell 2, and fuel cell 3  
to follow.

00 07 01 44 CC Roger. Copy. I can give you some - an update on your orbital map here.

00 07 01 53 LMP Roger. Standing by; go ahead.

00 07 01 55 CC Okay. For REV 5, the node - the time of the node will be 07 plus 17 plus 38. Longitude of the node will be 106.5 degrees east.

00 07 02 18 LMP Roger. 106.5 east, 07 plus 17 plus 38.

00 07 02 25 CC Roger. And the right ascension will be 06 plus 49.

00 07 02 32 LMP Say again.

00 07 02 33 CC The right ascension will be 06 plus 49.

00 07 02 39 LMP 06 plus 49.

00 07 02 48 CC Okay. And, 7 - Wally, you faded out on when you were describing the night retro check; we didn't get your comments on the COAS.

00 07 02 48 CDR Roger. I set the COAS for 31.7 degrees. It was more readily usable than the window align for that retro.

00 07 03 09 CC Okay. Roger. Okay. Real good. Was the basic data correlated pretty well for the night retro, Wally?

00 07 03 15 CDR Wally's affirmative. It looked real good on the earth horizon.

00 07 03 19 CC Okay. That's what they're shooting for. We'll talk to you over Guam about the day retro check and the discrepancy there.

00 07 03 25 CDR Roger.

00 07 03 31 CC And, Apollo 7, we plan to do that Duplex V check just as we start Guam there.

00 07 03 37 CDR Roger.

00 07 04 24 CC Apollo 7. You are 1 minute LOS Tananarivo; pick you up in Mercury in about 18 minutes.

00 07 04 30 CDR Roger.

MERCURY (REV 5)

00 07 22 30 CC Apollo 7, Houston through the Mercury. How do you read?

00 07 22 34 CDR Roger. Read you loud and clear.

00 07 22 36 CC Roger, Wally. You're five-by. How's the spacecraft systems status?

00 07 22 43 CDR We are in pretty good shape. We detected a continual yaw which we suspected before we started to fly. I'll give you some data on that. The control mode is SCS attitude HOLD, MAX deadband, high rate, limit cycle is ON.

00 07 23 06 CDR At 7 hours 17 minutes and 3 seconds, yaw was plus 007.10. At 17 hours 18 minutes and 56 seconds, yaw was plus 007.82, and it cycles back and forth between those kind of numbers at that rate.

00 07 23 33 CC Okay. We copy.

00 07 23 35 CDR We are knocking on the plus yaw side of the deadband.

00 07 23 40 CC Roger.

00 07 23 43 CMP The other systems are GO with the exception of the - well, we seem to have the O<sub>2</sub> full high come off the peg.

00 07 23 52 CC How so?

00 07 23 55 CMP Must have been a stuck valve.

00 07 23 58 CC Did you use the BARDOL procedure?

00 07 24 02 CMP We used BARDOL procedures, but that was like an hour ago.

00 07 24 06 CC Roger.

00 07 24 08 CMP And water accumulator auto 1: the flowmeter looks sluggish, and it's reading about .75 - make that about .8. The light is out.

00 07 24 23 CDR It is decreasing; it must be a winner.

00 07 24 26 CC Roger. Do you have any other systems problems?

00 07 24 32 CMP Donn solved his urine dump system problem.

00 07 24 38 CC Roger. Copy.

00 07 24 40 CDR That sounds like a personal problem.

00 07 24 42 CMP Yes, it was.

00 07 24 47 CC Does the spacecraft look good for about 18 revs?

00 07 24 51 CDR Eighteen revs a day.

00 07 24 53 CC Okay.

00 07 24 54 CDR We're ready to move to fast time right now.

00 07 24 58 CMP How about going back to MSOB and starting over tomorrow?

00 07 25 30 CC Apollo 7, Houston. You are GO for 18 dash 1.

00 07 25 36 CDR That suits us.

00 07 25 37 CC Real fine. Tom has got a question here for you.

00 07 25 41 SC Go ahead.

00 07 25 42 CC Okay. Wally, just want to hack out real fast on that one retro check. The night retro check came out real good, and the retro wants - John wants to ask you one question here. On a daylight check, when you came up to the 6 hours and 10 minutes, you read 134.7 at that time?

00 07 26 02 CDR That is affirmative. We were 20 seconds late with the check because it was so far off, and I was trying to bring it in.

00 07 26 10 CC Okay. Well, we do have some NAV vectors. They can account for a 1.4 difference, and it looks like what they would like to do is - down the road sometime is run another one.

00 07 26 21 CDR Okay. Let us do a little more homework on it, and we'll use the fuel.

00 07 26 25 CC Okay.

00 07 26 26 CDR Those are kind of expensive.

00 07 26 28 CC Say again, Wally.

00 07 26 30 CDR Those are kind of expensive to use as fuel.

00 07 26 33 CC Yes, we agree completely and said the night check came out good, and - well, they can account for half of that difference due to a vector.

00 07 26 41 CC Apollo 7. Opposite omni.

00 07 27 17 CC Apollo 7, Houston. We would like to shift over to Duplex B for a radio check.

00 07 27 26 CC Okay. Opposite omni on S-band first.

00 07 27 33 LMP Apollo 7 on Duplex B. How do you read? Over.

00 07 27 36 CC Okay. Stand by until we can get reconfigured with the site here, Walt.

00 07 27 41 LMP I'm already switched. How are you - oh, you're reading me S-band?

GUAM (REV 5)

00 07 27 44 CC Okay. We're real good. We read you Duplex B real fine.

00 07 27 52 LMP Roger. I'm reading you five-by-five. Do you read me Duplex B?

00 07 27 58 CC Five-by. Stand by one.

00 07 28 06 CC Okay. Apollo 7, you can go back Simplex A. The voice check was real good.

00 07 28 16 LMP Apollo 7. Simplex A. How do you read?

00 07 28 18 CC You're five-by.

00 07 28 22 LMP Likewise here.

00 07 30 25 SC We got our O<sub>2</sub> FLOW HI back.

00 07 30 28 CC Roger. We see it. And you've got 1 minute LOS Guam; pick you up on Hawaii in about 8 minutes

00 07 30 36 SC Roger. And we had a successful purge, both hydrogen and oxygen, all three fuel cells.

Looking ahead, I see vent batteries at 8 hours. We did that as part of our postinsertion checklist.

00 07 30 49 CC Roger. Copy.

00 07 30 51 SC The systems test meter position 4A went down to .60. That's as low as it went on the vent.

00 07 30 58 CC Roger.

HAWAII through GUAYMAS (REV 5)

00 07 39 45 CC Apollo 7, Houston.

00 07 39 48 CDR Go ahead.

00 07 39 50 CC Okay. Through Hawaii now. One thing GNC wanted to check on: they got a bit on TM that showed you had a restart. Have you had any RESTART lights on you computer?

00 07 40 01 CDR This is 7. That was in a routine we've done. We did zero optics, and we found from zero optics - we thought everything was okay, which would be capable because of the low rate in the lighting.

00 07 40 17 CC Okay. You're kinda garbled. I understand you did have one to reset and looks like all the erasable is real fine.

00 07 40 25 SC ...

00 07 51 25 CC Hello, Apollo 7, Houston.

00 07 51 27 CDR Roger, Tom. Go ahead.

00 07 51 29 CC Okay. Got good COMM with you now, Wally. Just wanted to recheck on the computer. When you did - did you get the alarm light at the same time that the RESTART - program alarm at the same time that the RESTART came on?

00 07 51 41 CDR That's affirmative. We've wrote that off as no problem, Tom.

00 07 51 44 CC Okay. But you did get a RESTART and a program alarm about the same time?

00 07 51 48 CDR That's affirmative. That was due to the zero optics. The gage swung too fast.

00 07 51 54 CC Okay. One item I want to - we're starting to track the S-IVB, and it's not separating as fast as they had anticipated. It's going to take a while to track it out, and then we'll have plenty of time on it.

00 07 52 11 CDR Okay.  
TANANARIVE (REV 6)

00 08 33 22 CC Apollo 7, this is Houston through Tananarive.

00 08 33 28 LMP Roger, Houston. Go ahead.

00 08 33 30 CC Roger. We're just standing by here. One item of interest: the hydrogen and oxygen purity is lots higher than predicted. It looks like the next purge that will be required will be some time after 40 hours.

00 08 33 44 LMP Roger. We'll stand by for the update; and since confession is good for the soul, one of those

hydrogen purges ran a little better than 2 minutes last time.

00 08 33 54 CC No problem.

00 08 35 13 IMP This is LMP. I want to log 20 squirts of water gun at 8 hours and 35 minutes into the flight.

00 08 35 31 CC Apollo 7, Houston. Roger. We copy.

00 08 35 38 SC We're using you for real-time logging whenever we have our DSE out of commission temporarily.

00 08 35 46 CC Okay.

00 08 38 49 SC Houston, this is Apollo 7. Do you have the good team on yet?

00 08 38 55 CC Apollo 7. Say again.

00 08 38 58 SC Sounds like you've got the good team working there.

00 08 39 02 CC Yes. That's affirmed.

00 08 39 08 SC Hope you had a nice trip back to Houston.

00 08 39 13 CC We had a beautiful trip. I tried to contact you, but no go.

00 08 39 21 SC Understand.

00 08 39 45 CC Apollo 7, Houston. We have 1 minute to LOS Tananarive.

00 08 39 53 SC Roger.

00 08 43 36 CT Voice control, Tananarive.

MERCURY (REV 6)

00 08 55 51 CC Apollo 7, Houston through Mercury. How do you read?

00 08 59 31 CC Apollo 7, Houston through Mercury.

00 08 59 38 LMP Roger, Houston. Go ahead.

00 08 59 39 CC Roger. You're coming in loud and clear. Just wanted to check - have you got all the basic stowage squared away, Walt?

00 08 59 47 LMP Seems like we have. We're up to that stage in the flight plan here where we kind of collect our housekeeping wits. Donn is attempting to settle down for a long winter's night.

00 08 59 59 CC Okay. Thank you.

00 09 00 34 CC Apollo 7, Houston. Opposite omni.

00 09 00 46 LMP Roger. I switched, but I showed a better lock-up on omni A which I had before. It's back up now. I still have the O<sub>2</sub> FLOW HI light. We've occasionally had the flowmeter come on down to around .8, but it's a very sluggish movement. I would appreciate it if, as soon as you get any kind of trend data on the option quantity, you'll let us know, and it'll really confirm the transducer problem.

00 09 02 22 LMP Houston, this is 7. Over.

00 09 02 26 CC Houston. Go.

00 09 02 30 SC We have block data on board up through REV 8, and we'll be standing for further update on block data at your convenience.

00 09 02 38 CC Houston. Roger.

( ) 00 09 02 45 CC Apollo 7, Houston. Let's try opposite omni again.

00 09 02 58 LMP This one looks a little better to me, but not too good. I'm going to try in between if you'd like. I can kind of tell here on the single straight meter. That's negative. Omni A seems to be best from here.

00 09 03 26 CC Roger. Thirty seconds to IOS and okay for omni A.

HAWAII (REV 6)

00 09 16 19 CC Apollo 7, Houston at Hawaii. Over.

00 09 16 23 CDR Roger. Reading you five-by.

00 09 16 26 CC Roger. Good news tonight. There's no EKG on a CMP or the LMP.

( ) 00 09 16 34 LMP Thank you very much (laughter). I'll tell the CDR.

00 09 16 39 CC Since the CMP is asleep, don't bother him; but we've got some checks we want the LMP to do.

00 09 16 46 LMP This is the LMP. Go on the checks.

00 09 16 50 CC Roger. Check that the sensor that goes into the lower end of your breast bone - there right in your chest - is plugged in the line. Check that the sensor - the external sensor - is plugged into the box and is tight. And then when you're done with all that, if it doesn't make up, check that the sensor is strapped to the body. And -

00 09 17 22 LMP I found one sensor that was loose. It was the upper one - the upper sternum.

00 09 17 27 CC Roger.

00 09 17 35 LMP How are you reading me now?

00 09 17 38 CC Loud and clear.

00 09 17 40 LMP How's my EKG, I mean?

00 09 17 45 CC Nothing yet.

00 09 17 49 CCT That's it.

00 09 17 54 CC That fixed it, LMP.

00 09 17 57 LMP Sorry about that.

00 09 18 04 CC Opposite omni, please.

00 09 18 33 CC Apollo 7, Houston. I have a block data on number 2 to give you.

00 09 20 17 CC Apollo 7, Houston.

00 09 20 20 LMP Go.

00 09 20 22 CC Roger. Both the last two stations confirm that you have been transmitting on both Simplex A and B. Do you concur?

00 09 20 35 CDR That's affirm. We're now on Simplex A.

00 09 20 38 CC Roger. We're about 1 minute to LOS. I'll have your block data for you over Tananarive if the voice is good; otherwise, on around.

00 09 20 55 CDR Roger. We'll be standing by.

HUNTSVILLE through GUAYMAS (REV 6)

00 09 23 03 CC Apollo 7, Houston.

00 09 24 11 CC Apollo 7, Houston.

00 09 25 16 CC Apollo 7, Houston. One minute to LOS. In the blind, up-telemetry command switch to RESET and release.

00 09 25 27 SC Roger. Are you reading the S-band as coming real low, and say again all after LOS?

00 09 25 33 CC Roger. Up-telemetry command switch to RESET.

00 09 25 50 CC Apollo 7, Houston. Return the up-telemetry command switch to NORMAL.

00 09 25 58 SC You're coming in way down in the mud. Do you want the up-telemetry?

## HUNTSVILLE through GUAYMAS (REV 7)

00 10 07 50 CC Apollo 7, Houston.

00 10 09 03 CC Apollo 7, Houston.

00 10 09 09 CDR Go ahead, Houston.

00 10 09 11 CC Roger. You sound pretty good this time.

00 10 09 15 CDR Roger. We're changing our ... canister at this time.

00 10 09 19 CC Roger.

00 10 09 24 LMP Houston, this is Apollo 7 again. Well, about 25 minutes ago, I guess, we noticed our glycol evap outlet temperature was climbing above 50, and the steam pressure was pegged low. The best ... above 60; we went to MANUAL and increased for 45 seconds, and we started to activate the secondary loop. Before we got the secondary loop completely activated, in about 10 minutes,

the temperature started down again, and there was no noticed activity for a couple of minutes; but it looks like the water boiler valve just might have frozen, and now it seems to be controlling fine back in AUTO.

00 10 10 18 CC Apollo 7, Houston. We copy.

00 10 10 23 LMP Roger. And I am in the midst of changing the lithium hydroxide canister. Would you verify it for me from the ECS people how long this button should have to be depressed preventing the canister prior to opening? It seems to be on a continual ...

00 10 10 40 CC Roger. Stand by.

00 10 11 05 CC You don't even need to press a button there, Walt.

00 10 11 31 CC Apollo 7, Houston. That's just a momentary depress on that canister.

00 10 11 39 LMP Roger. That's what I understood, but I think it must be for ... operation; it works all right now.

00 10 12 21 CC Walt, we would like to verify that you reset your up-telemetry command switch and then it went back to normal.

00 10 12 38 LMP Roger.

00 10 13 01 CC Apollo 7, Houston. Request a partial pressure O<sub>2</sub> reading.

00 10 13 15 IMP Stand by.

00 10 14 09 IMP Houston, this is Apollo 7. We took and changed the canister out of the A side board on the ground that we had inadvertently placed canister 2 in there. I switched canister 2 down to site B and removed canister 1, and canister 2 is now where it belonged in the first place.

00 10 14 49 CC Apollo 7, Houston. That's Roger.

MERCURY (REV 7)

00 10 31 06 CC Apollo 7, Houston through Mercury.

00 10 31 41 CC Apollo 7, Houston.

00 10 31 44 CDR Go ahead.

00 10 31 46 CC Roger. We need your partial pressure O<sub>2</sub> reading Wally, and also your status of the waste management overboard drain valve.

00 10 31 55 CDR Roger. You got the ... reading is 190 when you requested it - at about 10 15.

00 10 32 05 CC Say again the reading; I missed it.

00 10 32 08 CDR One nine zero.

00 10 32 16 CC Roger. Cleared to go ahead and close the waste management overboard drain valve ...

00 10 32 23 CDR Thank you.

00 10 32 26 CC The one you already closed at 10 15.

00 10 32 33 CDR Negative ...

00 10 32 41 CC Apollo 7, Houston. I've got some block data to give you.

00 10 33 06 CDR Send it up.

00 10 33 09 CC Roger. Block data number 2 009-3 Bravo plus 254 plus 1367 013 plus 29 plus 36 5150, 010 Alfa Charlie minus 054 minus 0162 014 plus 19 plus 12 4314, 011 Alfa Charlie plus 060 minus 0220 015 plus 54 plus 48 4131, 012 Alfa Charlie plus 134 minus 0330 017 plus 28 plus 48 4098, 0132 Alfa plus 262 minus 0282 019 plus 08, plus 06 4258, 0141 Bravo plus 220 minus 0620 020 plus 34 plus 03 4163. Houston. Over.

00 10 36 32 CDR Roger. Readback: 0093 Bravo plus 254 plus 1367 013 plus 29 plus 36 5150, 010 Alfa Charlie minus 054 minus 0162 014 plus 19 plus 12 4314, 011 Alfa Charlie plus 060 minus 0220 015 54 48 4131, 012 Alfa Charlie plus 134 minus 0330 017 28 48 4098, 0132 Alfa plus 262 minus 0282 019 08 06 4258, 0141 Bravo plus 220 minus 0620 020 34 03 4163. Over.

00 10 37 47 CC Roger, Wally. Readback is correct. Break. When we get over Hawaii, we are going to want to make an E memory dump by a VERB 74. And essentially, you'll be starting out with a clear DSKY, a VERB 74 enter, and then wait 1 minute.

00 10 38 02 CDR Roger.

00 10 38 05 CMP Houston, Apollo 7. I would like to log at 10 plus 35. I had 11 squirts on this water

pistol, and I'd like to log that the beef stew bites tend to be very crumbly and a lot of crumbs when you open the package even. Pretty crumby food!

00 10 38 27 CC Copy the crumbly food.  
HAWAII (REV 7)

00 10 49 24 CC Apollo 7, Houston.

00 10 49 28 CDR Go ahead.

00 10 49 29 CC Roger. Wally, at this time we would like to try Duplex A, and please notify when switching to Duplex A.

00 10 49 42 CDR On your MARK.

00 10 49 44 CC Roger. Duplex A -

00 10 49 46 CC Now.

00 10 49 59 CDR Houston, Apollo 7. How do you read Duplex A?

00 10 50 05 CC Apollo 7, Houston. It's a little more garbled than the other, but still about four-by-five.

00 10 50 12 CDR Roger. You sound exactly the same.

00 10 50 15 CC Roger. Let me check to make sure we're receiving downlink and that we can proceed with our VERB 74.

00 10 50 22 CDR Roger. Do you want me to remain Duplex A?

00 10 50 25 CC That's affirmative. We will stay Duplex A until we get close to LOS, and if we happen to miss it, return to Simplex A at LOS.

00 10 50 35 CDR Wilco. And, for the dump I will do a ... ENABLE right?

00 10 50 42 CC That's a negative. You want to make sure the  
DSKY is clear, and it looks like it is. ...  
Enter VERB 74 and enter, and then we will  
wait 1 minute.

00 10 50 56 CLR Standing by on your MARK.

00 10 51 10 CC Apollo 7, Houston.

00 10 51 11 CC Proceed, VERB 74.

00 10 51 23 CDR Houston, we're standing by.

00 10 51 25 CC Roger. Enter it, babe.

00 10 51 33 CC Wally, you can go ahead and make the entry from  
on board. We're not going to send it to you.

00 10 52 11 CC Apollo 7, Houston. Request you enter VERB 74.

00 10 52 57 CC Apollo 7, Houston.

00 10 53 15 CC Apollo 7, Houston.

00 10 53 18 CDR Go ahead.

00 10 53 20 CC Roger. Request you enter a VERB 74.

00 10 53 29 CDR Yes.

00 10 54 35 CC Apollo 7, Houston.

00 10 54 37 CDR Go ahead.

00 10 54 38 CC Roger. It looks like the E memory dump was  
good. We would like to verify the position  
of the water flow valve on panel 2 is in the  
AUTO position. That's the glycol evaporator  
water flow.

00 10 54 54 CDR Houston. That's affirmative. The ... is AUTO;  
the feed pressure is AUTO. The water flow is AUTO.

00 10 55 04 CC Houston. Roger.

00 10 55 05 CDR And it seems we just got the same thing again.  
Pressure ...

00 10 55 19 CC Apollo 7, Houston. Return to Simplex A and  
about 1 minute to LOS.

00 10 55 32 CDR Roger. Simplex A.  
REDSTONE (REV 7)

00 11 09 16 CC Apollo 7, Houston.

00 11 09 40 CC Apollo 7, Houston.

00 11 10 02 LMP Houston, Apollo 7. Do you read?

00 11 10 04 CC Apollo 7, Houston. Affirmative. Read you.

00 11 10 11 LMP Roger. I'm reading you very weak. It seems  
we've been running into a lot of passes here  
where between passes we're left without a tape  
recorder running, and we don't quite know the  
status of it when we're left that way. We  
would like to be using it to record some of  
these problems. I assume you're observing the  
anomaly we've got in our steam pressure now.  
I'm going to reservice the water boiler.

00 11 10 34 CC Roger. I understand. You're servicing the water  
boiler.  
MERCURY (REV 8)

00 12 06 14 CC Apollo 7, Houston. AOS Mercury.

00 12 06 18 CDR Roger.

00 12 06 27 LMP This is Apollo 7. We temporarily had our primary loop back working on the line. It is beginning to look like either the primary water flow valve - for a while we thought it was flux shutdown. I'm wondering if we start playing with it, eventually we will get it to come back up. The steam pressure reading was normal for a while, and it was controlling around a temperature of about 43. Right now, we are pegged low again. It looks like it is possibly the water control section of the 240 controller.

00 12 07 05 CC Walt, say again your last sentence there. It looks like what?

00 12 07 09 LMP I believe it is probably getting down to the water control section of the 240 controller. Also, we have a DTO to accomplish here. The CRYO stratification for hydrogen. It is - both tanks are within 90 plus or minus 5 percent of the hydrogen, and the procedure calls to let the pressure rise to about 260 to 265, and I believe that is the spec number. I would like the EECOM to tell me how high these pressures have been rising before they - the heaters shut off so I will know where to start doing the DTO. Over.

00 12 07 46 CC Roger. Stand by. We will get it for you.

( ) 00 12 07 48 LMP More specifically, Ron, I need the deadband that the hydrogen pressure tank 1 and tank 2 have been running back and forth between.

00 12 08 02 CC Roger.

00 12 08 35 LMP Tell Wally we just took a couple more pictures of his mountains to update them.

00 12 08 43 CC Roger.

00 12 08 56 LMP And we have been throwing data on that tape, and I hope we can get something worked out on that - the tape dumps - because we're terribly handicapped if we don't have the tape available to log on.

00 12 09 17 CC Roger. We concur, and I think we're back in cycle now on the thing.

00 12 09 23 LMP Okay. Understand. It would be nice if you know that we are going to be going over the horizon without the tape in a RECORD mode for us. Let us know.

00 12 09 33 CC Roger. What it amounts to on these night passes or nighttime here, is that we're down to just about one site per rev to dump it, and the Mercury S-band is down right now.

00 12 09 45 LMP Roger.

00 12 09 51 CDR We only have two stars available for the 252 alignment.

( )

00 12 09 58 CC Roger. We will have it shortly.

00 12 10 25 CDR Air frame 6 and magazine Bravo. Correction, magazine Peter. ...

00 12 10 39 CC I missed that, Wally. Say again.

00 12 10 41 CDR Roger. ... I would estimate that he is a coonie.

00 12 10 47 CC Ah so.

00 12 11 43 CDR Ron, do you have someone working with two stars?

00 12 11 51 CC Wait one - I think - P52. Don't we just pick a pair out of the CMC?

00 12 12 01 CDR Roger. We will go ahead like that.

00 12 12 03 CC Roger.

00 12 12 07 CDR Anybody come up with any suggestions on our FCS problem? The malfunction procedures call for activating the secondary loop whenever the primary radiator outlet temperature gets above 48. I have been resisting doing that and kind of going by the glycol EVAP TEMP. Right now, I am reading almost - radiator outlet temperature now that my glycol evap outlet TEMP is on about 52.

00 12 12 37 CDR I would like to hold to not activating the secondary loop until the primary glycol evaporator outlet TEMP would hit 60.

00 12 12 43 CC Apollo 7, Houston. We concur on that. We kind of believe that we're really - not really hot enough, and then we're starting to cool

down when it starts evaporating - maybe over Houston going too cold on that thing. We're working on that right now.

00 12 13 04 CDR Okay. During the night pass, the glycol evaporator outlet temperature got down as low as about 45 - something like that - before we got the evaporator working again.

00 12 13 16 CC Roger.

00 12 13 25 CDR Do we have anybody who can ... data ...

00 12 13 32 CC 7, Houston. LOS.

HAWAII (REV 8)

00 12 26 34 CC Apollo 7, Houston. I have your deadbands for H<sub>1</sub> and H<sub>2</sub> tanks.

00 12 26 39 LMP Roger. Go.

00 12 26 41 CC Roger. Tank 1 - H<sub>2</sub> tank 1 - 228 to 246, H<sub>2</sub> tank 2 237 and 255.

00 12 27 03 LMP Roger. 228 to 246 and 237 to 255, and I see that's what the pressures have been cycling back and forth. ... with the heaters.

00 12 27 11 CC That's affirmative in the R/O autoheaters and you can tell Wally that it looks like stars 11 and 12 would probably be pretty good stars to try for.

00 12 27 24 LMP Roger. Eleven and twelve, thank you. And we will accomplish the zero-g test after the alignment. We're still showing about 87 percent.

## REDSTONE (REV 8)

00 12 39 20 CC Apollo 7.

00 12 39 47 CC Apollo 7, Houston. Opposite omni.

00 12 40 37 CC Apollo 7, Houston. Let's try the original omni again.

00 12 41 02 CC Apollo 7, Houston. I've got some hot dope on the S-IVB.

00 12 41 44 CC Apollo 7, Houston.

00 12 42 23 CC Apollo 7, Houston.

00 12 43 20 CC Apollo 7, Houston. Go ahead and try in the blind. I understand you're reading us weak. We do not read you. We're monitoring the relative motion of the S-IVB and the spacecraft. It looks like it may require another phasing burn at about 16 to 16 and 1/2 hours. The DELTA-V will probably be 6 to 6 and 1/2 feet per second. Over.

00 12 43 54 CDR Apollo 7. I read your message but very weak.

00 12 43 57 CC Roger.

00 12 44 00 CDR It's lunch time at 16 hours. Is that correct?

00 12 44 03 CC That's affirmative - about.

00 12 44 08 CDR Roger.

00 12 46 11 CC Apollo 7, Houston. Thirty seconds LOS.

00 12 46 15 CDR Roger, Houston. We got your message.

00 12 46 18 CC Roger. Thank you.

00 12 46 19 CDR Apollo 7. I've got four balls, one on the star data check, and use star number 1 Alpheratz, star number 7 Menkar, and we're going to go ahead and take the gyro torquing angle. Is that the intention? Over.

00 12 46 53 CC Apollo 7, Houston. We'll take those angles.  
ASCENSION (REV 9)

00 13 05 31 CC Apollo 7, Houston. We'd like for you to switch to Simplex B on my MARK.

00 13 05 39 LMP Okay.

00 13 05 46 CC Apollo 7, you switch to Simplex B.

00 13 05 50 CC MARK.

00 13 05 59 LMP Houston, Apollo 7. We read Simplex B.

00 13 06 05 CC Apollo 7, Houston. Roger. You got a lot more graph at this time on Simplex B than on A.

00 13 06 12 LMP You're still coming through clear, but you're way down. I'd say about level 2 compared to the other.

00 13 06 23 CC Roger. And, Walt, we would like to verify that the primary evaporator water control valve on panel 382 is in the AUTO position.

00 13 06 36 LMP Roger. Did you read the data on the F52 that I did for the REFSMMAT realignment?

00 13 06 48 CC I missed that. Say again.

00 13 06 51 LMP Roger. ... downlink when I did the P52 for the REFSMMAT realignment?

00 13 06 55 CC Affirmative. Three balls 1 and stars 1 and 7; and, secondly, we would like to know what portion of the malfunction procedures that you have accomplished on the primary glycol of that ALT TEMP HI?

00 13 07 15 LMP Roger. I've gone down to box 18 or box 21, depending on how long you wait or whether you take the intermediate characteristics or not. That thing has stayed down for a long period of time; then it came up fairly spontaneously to steam pressure.

00 13 07 39 CC Roger. We understand.

00 13 07 43 LMP And one time ended up over with the primary evaporator water control valve ... closed. The other possibility is the evaporator was frozen. I'm going to go check the water control valve now.

00 13 08 00 CC Roger. Can you do that without disturbing our sleeping CMP?

00 13 08 09 SC We will be doing it. I also would like to get the same pressures that the height - that the oxygen tank is controlling to the actual pressures.

00 13 08 16 CC Roger. I have them if you're ready to copy.

00 13 08 41 SC Ready to copy. Go.

0 00 13 08 46 CC O<sub>2</sub> tank 1 deadband 880 to 926, O<sub>2</sub> tank 2 870 to 912.

00 13 08 52 SC Roger. Thank you. And how about just correlating between what these meters are reading, if you want to run that 5.8 CRYO zero-g test.

00 13 08 59 CC Roger.

00 13 09 01 SC And the hydrogen test is in work now.

00 13 09 07 CC Roger.

00 13 11 17 CC Apollo 7, Houston. One minute to LOS. Simplex A on LOS.

00 13 11 24 CDR Roger.

00 13 11 25 LMP And that was a good try on the evaporator water control. The evaporator water control primary is in AUTO; and for your information, I'm also running with the evaporator water control secondary in AUTO in case I do get into a situation where I have to activate the secondary loop.

00 13 11 45 CC Roger. Understand.

00 13 12 00 LMP Hey, Ron. It's not a good situation, but I don't consider we got any kind of real problems with that primary coolant loop right now.

00 13 12 13 CC 7, Houston. We concur with that.

00 13 12 21 CC 7, Houston. We're just now looking at the dump data that we have picked up on REV 7.

00 13 12 28 CDR Roger.

## MERCURY (REV 9)

00 13 41 01 CC Apollo 7, Houston through Mercury.

00 13 41 05 SC Got you loud and clear.

00 13 41 10 CC Roger. We would like to get a ~~TEB~~ 06 NOUN 21; read out the PIPA count. We would like to get your onboard readout. Our Y PIPA count down here has - oh, it's been zero for a long time.

00 13 41 35 CI ... through us.

00 13 41 44 LMP Hey, Ron. I concluded CRYO T 5.8 for the hydrogen tanks at 90 percent level, and it didn't look to me like we had any stratification. My pressures that were loaded down did drop a little bit, but I'm not sure just from the angle I'm reading it.

00 13 42 12 CC Walt, you are coming through HF at this time across there, and I can't read you very well. Can you talk a little slower?

00 13 42 19 LMP Roger. Understand. I did complete the hydrogen tanks, a 90-percent portion of the CRYO stratification test; and as I compared others, it was my own estimation that we really didn't have any stratification there.

## GUAM (REV 9)

00 13 52 38 CC Apollo 7, Houston.

00 13 52 41 CDR Go ahead.

00 13 52 42 CC Roger. Current tracking indicates that the service module - the command/service module will trail the S-IVB at MCCL by about 30 miles. So if we go ahead and do this upcoming maneuver, we will yield about nominal displacement a MC - MCCL. The S-IVB orbit on third day, however, yields a displacement between 63 and 87 miles if we go ahead and make the burn. And this was all based on beacon tracking, so it's pretty good.

00 13 53 21 CDR Roger.

00 13 53 27 LMP ... Let's get to it.

00 13 53 31 CC Roger. We're working on the update, and we'll probably give it over Redstone.

00 13 53 37 CDR Okay.

00 13 53 39 CC Looks like the GETI is about 15 plus 52, though.

00 13 53 45 CDR Roger.

REDSTONE (REV 9)

00 14 13 04 CC Apollo 7, Houston. I have a maneuver PAD to give you.

00 14 13 37 CC Apollo 7, Houston.

00 14 14 36 CC Apollo 7, Houston. Opposite omni.

00 14 15 30 CC Apollo 7, Houston.

00 14 16 19 CC Apollo 7, Houston.

00 14 16 38 CC Apollo 7, Houston through Redstone.

00 14 16 48 CDR Roger. We read you.

00 14 16 50 CC Roger. I have a maneuver PAD to give you.

00 14 16 54 CDR You're very weak, but we think we can take it.  
Go ahead.

00 14 16 58 CC Roger. Phasing number 2: 015 52 0000 NA NA  
NA, 1647 plus 1202 00065 32445 NA NA 019. Skip  
to roll, pitch, yaw: roll 181, pitch 276, yaw  
001. Comment: RCS/SCS BEF heads up, plus X  
thrusters, monitor burn with P47. Read back.

00 14 16 49 CC Apollo 7, Houston. Opposite omni.

00 14 19 47 CC Apollo 7, Houston. Did you copy?

00 14 20 14 CC Apollo 7. One minute LOS; Ascension 14 plus 39.

00 14 20 24 CDR Roger. We read your whole message. Did you  
copy back?

00 14 20 28 CC Negative on the readback.  
ASCENSION (REV 10)

00 14 42 33 CC Apollo 7, Houston through Ascension.

00 14 42 37 IMP Roger, Houston. This is Apollo 7. How do you  
read this time?

00 14 42 40 CC Roger. Loud and clear this time, Walt. We  
plan to reservice the evaporator and then shut  
it down.

00 14 42 50 IMP 52 0000 NA 1647 plus 1202 00065 32445 NA 019  
181 276 001. And I copied all the realign.

00 14 43 18 CC Apollo 7, Houston. Say again the GTI.

00 14 43 21 IMP Roger. GTI is 015 52 0000.

00 14 43 30 CC Roger. Your readback is correct. 7, Houston.  
The steps on reservicing the shutdown are real

good. Reference information; make sure you have them. Lock all the back steam pressure practically AUTO to MANUAL. Steam pressure INCREASE switch, INCREASE for 45 seconds. Glycol is at - H<sub>2</sub>O flow ON for 2 minutes and then center.

00 14 43 38 LMP Roger. You know I have already done that twice in the past, and if you notice now that steam pressure is unhooked and come back up. It seems to come up whenever the glycol evaporator outlet temperature gets down pretty cool like during the night. Do you want me to continue in going to MANUAL, INCREASE 45 seconds, and reservice the water evaporator?

00 14 44 26 CC Affirmative. We just want to reservice it now and then shut it down.

00 14 44 32 LMP Roger.

00 14 44 33 LMP The idea, Walt, is that the radiators will carry a load without the primary evaporator on the line.

00 14 45 26 LMP I don't think we have any manual control over the steam pressure. I am going to service the water flowing now.

00 14 45 36 CC Roger.

00 14 46 10 LMP Wally seems to have a pretty bad head cold. He took two aspirins about 15 minutes ago, and he has been blowing his nose.

00 14 46 21 CC Walt, say again. I missed that.

00 14 46 25 LMP Wally has a pretty stuffed-up head here. He took two aspirins about 15 minutes ago and has been blowing his nose pretty much all day long.

00 14 46 41 CC Roger. We understand.

00 14 46 46 LMP We would like to check on ...

00 14 47 12 CC About 1 minute until LOS there, Walt. We just want to make sure that you realize we are trying to shut down evaporator, and we think the radiator will carry the load.

00 14 47 22 LMP Roger. See you all later ...

MERCURY (REV 10)

00 15 16 35 CC Apollo 7, Houston. I can give you time back at 35 minutes prior to the burn. Four, three, two, one.

00 15 17 00 CC MARK.

00 15 17 01 CC Thirty-five minutes.

00 15 17 03 LMP That's 35, wasn't it?

00 15 17 05 CC Affirmative, 35.

00 15 17 14 LMP - around - here at the glycol evaporator, and we have the steam pressure in MANUAL and the water flow OFF, but that last bit of servicing I did seemed to do a good bit of increase in the steam pressure.

00 15 17 31 CC Roger. Understand. The last bit of servicing increased the steam pressure?

00 15 17 36 IMP Yes. That last 2 minutes worth brought the steam pressure up right handily. Right now I'm reading about .23 on the steam pressure.

00 15 16 50 CC Roger.

00 15 18 08 CC Walt, we concur with that. That's okay.

01 15 18 11 CDR That's good news. Yes.

00 15 18 14 CC Roger. Is there an MD type there, or do you still have those experimental doctors there?

00 15 18 26 CC They're watching and waiting.

00 15 18 29 CDR You know I asked about taking a decongestant or antibiotic.

00 15 18 47 CC Roger. Stand by. I wasn't aware of that, Wally; I'll get the word on it.

00 15 18 54 CDR Didn't you get the word that Walt passed back earlier? I've taken two aspirin.

00 15 19 07 CC Say again. I think that was in the garbled part that we couldn't make out. Say again the problem.

00 15 19 12 CDR I have a nose cold. I've already gone through about eight or nine Kleenexes with some pretty good blows. I've taken two aspirin, and I am wondering if there is anything else I could take?

00 15 19 26 CC Roger.

00 15 19 40 IMP I'd like to find out your druthers on the water boiler after that last servicing. If

we're going to leave it off for a while -  
because you know we don't really need it -  
I'd still sometime in the future like to run  
it again. I'm not sure but what it's not work-  
ing right now.

01 15 20 32 CC Walt, this is kind of what we expected in this  
condition with them not running, and what we'd  
like to do is try to rev, at least a rev any-  
how, with the EVAP off the line.

00 15 20 45 LMP Roger. Whatever you say.

00 15 22 34 CC Wally, Houston here. The good doctors are  
recommending that you take one Actifed or the  
Code Echo.

00 15 22 46 CDR A decongestant, is that it?

00 15 22 50 CC That's affirmative. That's what it is.

00 15 22 55 CDR Okay.

GUAM (REV 10)

00 15 24 16 CC Apollo 7, Houston. We want to take a look at  
the PIPA biases. We'd like you to remain in  
P47 for awhile after the burn on the Redstone  
pass.

00 15 24 29 CDR Okay.

00 15 27 02 CC Apollo 7, Houston.

00 15 27 06 IMP Go ahead.

00 15 27 07 CC Roger. It looks like we're going to have to  
have one final request after the burn here.

Our calculations show that our waste water is going to be 85 percent at about 19 hours, and we're not sure whether Donn can hook up all this good deal stuff in the middle of your guys' sleep period, so it's kinda at your discretion - whether you want to dump it prior to going to bed or let Donn dump it sometime around 19 hours.

00 15 27 31 SC

Roger. It's all been hooked up now. We have that urine dump hose hooked up at one end all the time. It's a simple job for one fellow without disturbing us, but I had mentioned - at least to Deke - about putting that waste water tank on up to more like 95 percent so you don't have to have quite as high an activity dumping it all the time.

00 15 28 01 CC

We're kinda agreeing with you in a way, and yet we'd kinda like to let it run up to the full ... point a little later on in the mission than in the early part of the mission.

00 15 28 15 SC

... Okay. We do have a gage ... 5 percent up above 90 - without too much strain if we can get around to it.

00 15 29 18 CC

Walt, I think we can give you probably an actual number a little later on in the mission here when we figure out how much fuel cells

are dumping in the water in and all these good deal things.

00 15 29 29 LMP ...  
REDSTONE (REV 11)

00 15 48 14 CC Apollo 7, Houston through Redstone.

00 15 48 51 CC Apollo -

00 15 49 19 CC Apollo 7, Houston. Request omni A.

00 15 49 29 SC Roger. Omni A.

00 15 49 32 CC Roger.

00 15 52 02 SC Turning.

00 15 52 04 CC Roger.

00 15 52 28 SC Braking, please.

00 15 52 30 SC Roger.

00 15 52 31 CLR We flipped it in that burn that long. Residuals are zero on the DELTA-V gage - and completed the -

00 15 52 39 CC Do you affirm?

00 15 55 29 CC Apollo 7, Houston. One minute LOS. I believe that we got our money's worth of day. How about getting a good night's sleep?

00 15 55 38 CLR Roger. Ron, thanks for your help, and Donn is on watch.

00 15 55 42 CC Roger.  
CANARY (REV 11)

00 16 21 51 CC Apollo 7, Houston.

00 16 21 58 CMP Houston, Apollo 7. Go.

00 16 22 00 CC Roger. I have two items: we would like a check on the CMP BIOMED harness when it is convenient; we are not getting anything; and we would like to check the pin connectors, the signal conditioners, connectors, and at last resort, press down on the sensor. Second item: information, it will probably take about 28 minutes for draining the H<sub>2</sub>O.

00 16 22 36 CMP Roger. I have been fighting this harness It doesn't make up properly. I don't know how we are going to get it ...

00 16 22 43 CC Roger.

00 16 22 46 CMP Running water.

00 16 22 48 CC I am sorry, Apollo; I cut you out. Say again, please.

00 16 22 52 CMP I say my BIOMED harness is not making up properly. I don't know whether it is going to work.

00 16 22 58 CC Roger.

MERCURY (REV 11)

00 16 51 45 CC Apollo 7, Houston.

00 16 52 19 CMP Houston, Apollo 7. Go.

00 16 52 22 CC Roger. I have a couple of items here that we would like verification if you have it; that the water chlorination was performed at 11 hours and 20 minutes. Second item, I

mentioned it before, but I couldn't understand the answer. We want to advise it will take 28 minutes to drain the water.

00 16 52 53      CMP      Roger. Understand. Twenty-eight minutes to drain the water. You are referring to the waste-tank dump.

00 16 53 00      CC      I am sorry, waste-tank dump. Affirmative.

00 16 53 04      CMP      Roger. We are only up to 40 percent on waste water so we got a ways to go.

00 16 53 10      CC      Thank you.

00 16 53 14      CC      Apollo 7, Houston. Did you read me on the water chlorination?

00 16 53 19      CMP      Roger. We did the chlorination at 11 hours 20 minutes; Wally did it.

00 16 53 24      CC      Thank you.

00 16 53 39      CMP      Houston, Apollo 7. Command module pilot got about 6 hours of sack time, of which 4 hours was pretty decent sleep. I would have slept a little better except that I am not used to going to bed at 6 o'clock local time for me. I think in a day or two I will adjust to the cycle.

00 16 54 00      CC      Apollo 7, Houston. Roger.  
REDSTONE (REV 11)

00 17 24 22      CC      Apollo 7, Houston.

00 17 24 25      CMP      Houston, Apollo 7. Go.

00 17 24 27 CC Roger. We have a procedure that we would like for you to go through for some ground analysis. We monitor that you are in POO. We would like for you to follow this procedure: VERB 22 NOUN 21, enter.

00 17 24 50 CMP Roger. You want me to do VERB 22 NOUN 21, enter.

00 17 24 53 CC Affirmative.

00 17 25 02 CMP It is done.

00 17 25 03 CC Thank you.

00 17 25 12 CC Roger. Now go plus lllll, enter.

00 17 25 21 CMP Roger. Plus five ones, enter.

00 17 25 23 CC Affirmative.

00 17 26 04 CC Apollo 7, Houston. They are merely monitoring this from the ground. Also, one other point: they would like to confirm the 40 percent reading on the water, on the waste water.

00 17 26 23 CMP Oh, wait a second. Stand by. That is 75.

00 17 26 26 CC Roger. Understand. Seventy-five.

00 17 26 28 CMP Roger. I gave you the wrong number before.

00 17 26 31 CC Roger.

CANARY (REV. 12)

00 17 54 04 CC Apollo 7, Houston, AOS Canary.

00 17 54 07 CMP Roger, Houston, Apollo 7.

00 17 58 01 CC Apollo 7, Houston. Opposite omni, please.

00 17 58 05 CMP Roger.

00 17 58 08 CC Apollo 7, Houston. Coming up in about 2 minutes  
 LOS at Canary, and we have a brief pass at Madrid.  
 And it will be about 40 minutes before we pick  
 you up at Honeysuckle, and we will need the S-band  
 volume up at that time. That will be Honeysuckle  
 about 18 38.

00 17 58 26 CMP Roger. Understand. Honeysuckle S-band only,  
 18 38.

00 17 58 30 CC Roger.  
 HONEYSUCKLE (REV 12)

00 18 39 07 CC Apollo 7, Houston.

00 18 40 31 CC Apollo 7, Houston.

00 18 42 10 CC Apollo 7, Houston.

00 18 43 22 CC Apollo 7, Houston. One minute LOS Honeysuckle;  
 Redstone at 18 plus 57.  
 REDSTONE (REV 12)

00 18 58 08 CC Apollo 7, Houston.

00 18 58 12 CMP Roger. Houston, Apollo 7. Co.

00 18 58 14 CC Roger. AOS Redstone.

00 18 58 18 CMP Roger. I missed you at Honeysuckle.

00 18 58 20 CC Roger. We couldn't get lock-on.

00 18 58 24 CMP That is what I thought. It sounded like it was  
 trying there a couple of times.

00 18 58 28 CC I thought I heard you trying to answer, too.  
 All I heard was keying and side tones.

00 18 58 33 CMP Yes.

00 18 58 34 CC Apollo 7, Houston. Would like some clarification on the BIOMED harness. If you can, just briefly, was it the connectors wouldn't stay together or what?

00 18 58 50 CMP Well, I got it together now. Are you getting any signal on it?

00 18 58 54 CC Negative. Okay. That is all I wanted to know.

00 18 59 01 CMP Roger. I had trouble getting the plugs to make up. They would stick together, but they wouldn't quite go all the way in and lock. I finally got it to lock.

00 18 59 20 CC Apollo 7, Houston. Roger. Copied. And what is you H<sub>2</sub>O waste water quantity now?

00 19 00 33 CC Apollo 7, Houston. Opposite omni, please.

00 19 01 05 CC Apollo 7, Houston. Opposite omni, please.

00 19 01 09 CMP Roger, Bill. I just switched off. Did you want to go back?

00 19 01 12 CC Negative. Stand by one.

00 19 01 31 CC Apollo 7, Houston. Negative. You have it now. We have COMM, and we lost you there for about a minute.

00 19 01 38 CMP Roger.

00 19 04 53 CC CAP COMM.

00 19 05 27 CC Apollo 7, Houston. Opposite omni, please.

00 19 05 44 CC Apollo 7, Houston. One minute LOS Redstone; Antigua at 19 plus 16.

## ANTIGUA (REV 13)

00 19 16 53 CC Apollo 7, Houston.

00 19 16 57 CMP This is Apollo 7. Go.

00 19 16 59 CC Roger. AOS at Antigua. We have about 20 minutes.

00 19 17 03 CMP Okay. Bill, I have some readings on command module RCS jet temperatures. Do you want those numbers?

00 19 17 04 CC I'll take them. Go.

00 19 17 16 CMP Okay. These are test meter readings. They are all - 5C is 5 volts; 5D is 4.8; 6A was 4.8; 6B, C, and D were all 5. These were taken about 16 hours.

00 19 17 34 CC Roger. Understand. Hello, Apollo 7, Houston. I do have a flight plan update.

00 19 17 47 CMP Roger. Go with your flight plan update.

00 19 17 51 CC At 23 plus 53, TV ON. That is at Texas AOS on stateside pass. That is the end of the flight plan update.

00 19 18 09 CMP I understand. You want TV on at 23 plus 53. How does that fit in with our burn and rendezvous sequence?

00 19 18 16 CC That should fit in all right.

00 19 18 20 CMP Okay. Sounds like you got some music coming in the background. Is that you?

00 19 18 25 CC You must be picking up the twilight zone there.

( ) 00 19 20 10 CMP Bill, is someone trying to pipe in a radio program to us, or are we just picking that up spiritually?

00 19 20 16 CC That must be a spurious signal, Donn. No, we don't have anything piped in.

00 19 20 21 CMP Okay. I am getting a hot tip on some hospital insurance plan from some guy.

00 19 20 26 CC Okay. Maybe they are trying to tell you something.

00 19 20 30 CMP Maybe he knows something I don't.

00 19 23 33 CC Apollo 7, Houston. Coming up on LOS Antigua; AOS Canary at 19 plus 27.

00 19 23 41 CMP Roger. Understand. Log another 12 clicks on water for me, will you?

00 19 23 47 CC Roger.

CANARY (REV 13)

00 19 27 58 CC Apollo 7, Houston. AOS Canary.

00 19 28 02 CMP Roger. Go.

00 19 34 49 CC Apollo 7, Houston. Coming up on LOS Canary. Carnarvon at 20 plus 03.

CARNARVON through HONEYSUCKLE (REV 13)

00 20 04 37 CC Apollo 7, Houston.

00 20 04 42 CMP This is Apollo 7. Go.

00 23 04 44 CC Roger. AOS Carnarvon.

00 20 04 47 CMP Roger.

00 20 08 06 CMP Houston, Apollo 7.

( ) 00 20 08 10 CC Apollo 7, Houston.

00 20 08 13 CMP Roger. I was just doing a little star examination here at sunset with the sun at my back, so to speak, and you can see stars - quite a few - out the telescope; however, the minute you move the telescope controls, a lot of shiny white particles flutter out, and they obscure the field of view. I know what that is; apparently, these particles are some moisture in the optics assembly that get out when you're moving around in shaft motion, and they go out and obscure what you're looking at if the sun is shining on them.

00 20 08 50 CC Roger. I understand that you can see stars in the telescope okay with the sun at your back; however, when you move, the optics in shaft - their white particles come off and sort of cloud the view.

00 20 09 05 CMP That's right. Looks like it's snowing out there, and it would be impossible to do any kind of useful alignment with a situation like that. Also, at times when the sun is more direct on the side where the optics are, it appears to be either a lot of light leak or sun shining reflecting down inside the optics assembly, but except at near sundown with the sun at the opposite side from the optics, you just don't see anything when

you look out there. You just see a big blur of light.

00 20 09 44

CC

Roger. I understand that you apparently have something that looks like a light leak when the sun is directly on the side of the - is that the side of the spacecraft where the optics are located?

00 20 09 56

CMP

Oh, I don't know if it's directly on that side or not; it's kind of hard to tell, but at times when the sun is up and we get some random drifting attitude here, I've looked in to see if I could see anything, and it was just near impossible. There was just a lot of light in the telescope. It had the appearance of a light leak around - somewhere in the assembly. I don't know if that's true or not or perhaps it's just the reflection coming in, but it makes it hard to see anything.

00 20 10 26

CC

Roger.

00 20 10 38

CC

Apollo 7, Houston. Have you been able to go through an alignment?

00 20 10 44

CMP

Not in the daytime. I'm going to do a fine align here in just a minute.

00 20 10 49

CC

Okay.

00 20 13 39

CMP

Houston, are you getting these gyro torquing angles?

00 20 13 43

CC

Apollo 7, Houston. Stand by.

00 20 14 18 CC Apollo 7, Houston. Roger. We are receiving gyro torquing angles.

00 20 18 32 CC Apollo 7, Houston. Coming up LOS Honeysuckle; at Redstone at 20 plus 33.  
REDSTONE (REV 13)

00 20 34 09 CC Apollo 7, Houston.

00 20 34 13 CMP Roger, Houston. Go.

00 20 34 16 CC Roger. It has been advised that we monitor you have had a switchover to a secondary of low proportional unit in primary loop and request that you switch back to the primary for a proportional unit.

00 20 34 31 CMP Roger. Stand by.

00 20 35 21 CMP We are now back on one. Do you want me to leave it in one, or go back to AUTO?

00 20 35 36 CC Go to AUTO. Apollo 7, Houston. Go to AUTO.

00 20 35 40 CMP Okay.

00 20 35 41 CC Also, we are now monitoring 85 percent on waste water.

00 20 35 45 CMP Say again.

00 20 35 46 CC Ground monitors 85 percent quantity on waste water.

00 20 35 55 CMP I can't read you, Bill; you're coming in garbled with a lot of static.

00 20 35 59 CC Roger. Waste water dump, waste water dump: we're monitoring 85 percent.

00 20 37 36 CC Apollo 7, Houston. How do you read now?

00 20 31 49 CMP That's better, Houston.

00 20 37 51 CC Roger. Did you get my call about the waste water dump?

00 20 37 58 CMP Roger. Say again about the water dump.

00 20 38 00 CC We are monitoring 85 percent quantity waste water now.

00 20 38 15 CMP Roger. Understand you got 85; I'll have to get Wally up to get under him, to get those pieces. I'd rather wait until he wakes up, which - he'll be awake in another hour or so anyway. Could we wait till then?

00 20 38 27 CC Roger. Stand by.

00 20 38 49 CC Apollo 7, Houston. Affirmative. You can wait another hour. We're 1 minute LOS Redstone, and we'll have AOS Bahamas at 20 plus 49.

00 20 39 02 CMP Understand.

GRAND BAHAMA ISLAND through BERMUDA (REV 14)

00 20 50 53 CC Apollo 7, Houston.

00 20 50 57 CMP Houston, this is Apollo 7. Go.

00 20 50 59 CC Donn, I would like to brief you all on something that has come up here, and it has to do with the Y PIPA. Statement is made that based on telemetry readouts, we feel or suspect that Y PIPA counts are not getting into the CMC. We've been monitoring practically zero. Now

this is still sort of in ferment, but it looks like now they would like to have an RCS burn completed to perform a check on the Y PIPA's. If so, this will be done on the next rev over Texas.

00 20 52 04      CC      Apollo 7, Houston. This would be a sort of small burn plus Y, then minus Y, then total DELTA-V about 5 feet per second.

00 20 52 15      CMP      Bill, I missed practically your whole transmission, and all I heard was that you had something for me, and then you said something about a small burn. Would you run it by again, please?

00 20 52 27      CC      Roger. Apollo 7, Houston. How do you read now?

00 20 52 31      CMP      Roger. It's loud and clear.

00 20 52 33      CC      Right. Based on telemetry readouts, we suspect the Y-axis, Y-axis PIPA counts are not getting into the CMC. In order to check this out, we would like to do a small RCS translation plus Y and then minus Y. Total test will consume about 10 pounds of fuel, and it's proposed that this be performed at 22 plus 23 and will be over Texas on your next pass.

00 20 53 12      CMP      Okay. Twenty-two plus 23; you will want a plus Y and a minus Y. Do you want us to have a program up like 47, then?

00 20 53 21 CC

Okay. I'll go through the procedure that is proposed here now. Step 1, we would like to - the test to be done in P00; also, we would like to have A/C roll ENABLED. Then the attitude would be roll 180, pitch 326, and yaw zero. With that attitude, we would like a plus Y translation for 7 seconds, then turn the A/C roll back off.

00 20 53 23 CMP

Wait a second, just hold the phone. You want P00, you want A/C roll ENABLED, I got 180, 3260 roll; and after that, I was replying on that, but you were talking. Would you say again all that after the attitude?

00 20 53 35 CC

Roger. Sorry about that. I will go a little bit slower. Roger. I'll go back over it. You got it copied correctly. We do want it in P00, and we would like the SCS channel A/C roll ENABLED also for the test. Attitude, roll 180, pitch 326, yaw zero. With that attitude, translate plus Y 7 seconds; then wait 30 seconds, 30 seconds; then translate minus Y for 7 seconds; then turn the A/C roll channel back off.

00 20 55 41 CMP

Roger. You have a terrible squeal in there, Bill; I don't know what it is. I understand, and you want plus Y for 7 seconds, then pause 30 seconds, then minus Y 7 seconds. Now at what time again did you want this, 22 plus how many?

00 20 55 57 CC We would like that at 22 hours and 23 minutes.  
That will be over Texas.

00 20 56 04 CMP Okay. I guess we can do that. Just out of  
curiosity, what do you hope to prove by having  
only POO going? That won't - certainly won't  
put into the same vector if you do that.

00 20 56 18 CC Well, actually what we want to do is monitor your  
PIPA's and see if in fact they are feeding infor-  
mation into the computer.

00 20 56 28 CMP I see.

00 20 56 34 CC Also, I have a block data update if you will  
call me when you are ready to copy.

00 20 56 41 CMP All right. Stand by.

00 20 57 55 CMP Bill, you can go ahead with your block ...

00 20 57 59 CC Roger. Be for 015 dash 1 Alfa plus 291 minus  
0629 0021 042 4275, 016 dash 1 Bravo plus 312  
minus 0630 023 4641 4539, 017 dash 1 Alfa plus  
298 minus 0629 025 22 13 4856, 018 dash 1 Alfa  
plus 252 minus 0685 026 5628 5106, 019 dash  
4 Alfa plus 314 minus 1624 029 4342.

00 21 00 25 CC Apollo 7, Houston. Are you reading?  
CANARY (REV 14)

00 21 02 55 CC Apollo 7, Houston.

00 21 02 57 CMP Roger. Go ahead, Houston. You dropped out  
there for 3 or 4 minutes.

00 21 03 02 CC Roger. Meyer here. How far did we get through  
on that?

00 21 03 10      CMP      Just up to 15.

00 21 01 13      CC      Roger. Did - okay, I'll go through 015 dash 1 Alfa briefly again. 015 dash 1 Alfa plus 291 minus 0629 022 1042 4275. Starting with the next one: 016 dash 1 Bravo plus 312 minus 0630 023 4641 4539, 017 dash 1 Alfa plus 298 minus 0629 025 2218 4856, 018 dash 1 Alfa plus 252 minus 0685 026 5628 5106, 019 dash 4 Alfa plus 341 minus 1624 029 4342, 4363 0202 plus 310 minus 1623 031 1829 4679, 021 dash 4 Alfa plus 261 minus 1633 032 53 56 4944, 021 dash 4 Alfa. Standing by for readback.

00 21 06 17      CMP      Roger. Read back follows: 015 dash 1 Alfa plus 291 minus 0629 022 10 42 4275, 016 dash 1 Bravo plus 312 minus 0630 023 46 41 4539, 017 dash 1 Alfa plus 298 minus 0629 025 22 18 4856, 018 dash 1 A plus 252 minus 0685 026 56 28 51 01. -

00 21 07 35      CC      Apollo 7, Houston.

00 21 08 21      CC      Apollo 7, Houston.

00 21 08 33      CC      Apollo 7, Houston.

00 21 09 03      CC      Apollo 7, Houston.

00 21 09 20      CC      Apollo 7, Houston.

00 21 09 21      CMP      Roger. Go.

00 21 09 25      CC      Roger. I only got part of the readback. If you would confirm in the third block 017 dash 1 Alfa, second line plus 298.

00 21 09 37 CMP Roger. Plus 298.

00 21 09 39 CC Okay. If you would pick up and read as far as you can get, starting with 019 dash 4 Alfa.

00 21 09 47 CMP Okay. Here goes: 194 Alfa plus 314 minus 1624 029 4342 4363, 020 dash 4 Alfa plus 310 minus 1623 0311829 4679, 021 dash 4 A plus ...

00 21 10 14 CMP ...  
CARNARVON (REV 14)

00 21 39 10 CC Apollo 7, Houston.

00 21 39 18 CMP Roger. Houston, Apollo 7. Go.

00 21 39 20 CC Roger. AOS Carnarvon. I also have an advisory. We're monitoring 90 percent - 90 percent on waste water now, and we'd like to get a dump whenever - as soon as it is convenient.

00 21 39 36 CMP Okay. Wally is still in the sack. As soon as he's up, we'll dump it; and meanwhile, I'm starting to maneuver around to the attitude for that little test maneuver you want to do . . .

00 21 39 46 CC Roger. Thank you.

00 21 45 59 CC Apollo 7, Houston. We have about a little over 1 minute to LOS Carnarvon. Request S-band volume up, please.

00 21 46 11 CMP Roger. S-band volume going up.

00 21 46 14 CC Thank you.  
HONEYSCUKLE (REV 14)

00 21 47 10 CC Apollo 7, Houston.

00 21 47 15 SC Roger, Houston. Go. Apollo 7.

00 21 47 17 CC Roger. After the RCS test over the States, we will be sending up two NAV loads and one target load, and we will just work on them as soon as we can.

00 21 47 35 LMP Okay. Fine. Hey, Bill?

00 21 47 42 CC Roger. Go.

00 21 47 48 CMP Roger. A couple of hours ago - I neglected to tell you before that, and I'm sorry - we had an anomaly up here. We got an AC bus 1 drop out, and all we did was reset it, and it kept on running; and we never did see anything anomalous other than that, other than we confirm that the voltage has dropped off and the inverter had come off the line apparently.

00 21 48 10 CC Okay. You had an AC bus 1 drop out. You reset it, and it was okay, but you did confirm it was a bona fide malfunction because the voltage did drop.

00 21 48 21 CMP That's right. All three phases were - well, were pegged on the bottom of the meter, and all we did was hit RESET and punch the warning lights off, and it kept right on running.

00 21 48 33 CC Okay. Thank you very much. That is copied.

00 21 48 36 CMP Okay. We've had no trouble with it since. Everything's been normal.

00 21 48 39 CC All right. Thank you.

00 21 52 50 CC Apollo 7, Houston. Coming up on LOS at Honey-suckle. We will have acquisition Texas at 22 plus 19.

00 21 53 00 CMP Roger. You are saying 22 plus 19.

00 21 53 02 CC Roger.

TEXAS through BERMUDA (REV 14)

00 22 19 53 CC Apollo 7, Houston.

00 22 19 58 SC Roger, Houston. Go.

00 22 19 59 CC Roger. AOS Texas. I'll give you a time hack here.

00 22 20 09 CC Twenty-two hours, 20 minutes, 9, 10, 11, 12.

00 22 20 15 LMP Roger. We're right on it.

00 22 20 18 CC And counting to burn: 2 minutes and 38, 7, 6, 5.

00 22 20 26 LMP Roger. Thank you.

00 22 20 49 LMP Houston, Apollo 7. Do you read?

00 22 20 52 CC Roger. Apollo 7, Houston. Go.

00 22 20 53 LMP Roger. I'm on the right lead headset. I commenced dumping the waste water tank about 2 minutes ago. I'd like to have you confirm the temperature in that dump line whenever you get a chance.

00 22 21 06 CC Roger.

00 22 21 15 LMP And I understand Donn told you about the AC batt 1 temporary glitch there. I can't figure

why it came off; I don't think we have the automatic disconnect anymore.

00 22 21 26 CC Roger. Understand. We copied that one.

00 22 21 38 CC Apollo 7, Houston. We would like a TLM input to high, please; telemetry input high.

00 22 21 50 LMP Look. If you guys are in the middle of a dump, I have to go planned RESET to do that. If you are in the middle of a dump, I'm going to stop it.

00 22 22 01 CC We're not dumping.

00 22 22 13 LMP You guys can either stop your dump in command high, or I'm going to have to do it.

00 22 22 18 CC Apollo 7, Houston. We are not dumping.

00 22 22 22 LMP Okay. Thank you.

00 22 22 34 LMP Go up to high bit rate?

00 22 22 37 CC Roger.

00 22 23 05 CC Flus Y ...

00 22 23 08 LMP Affirmative.

00 22 23 41 SC Roger. We're going to count down to the burn.

00 22 23 45 CC Roger.

00 22 23 46 SC Four, three, two, one.

00 22 23 50 SC MARK.

TEXAS through BERMUDA (REV 15)

00 22 24 33 CC Apollo 7, Houston. That PIPA check looked good. Good information, and we will be updating your PIPA bias later.

00 22 24 41 LMP Roger. Understand. PIPA check looked good.  
Thank you.

00 22 24 46 LMP Bill, we checked the PIPA's on here twice, and  
I've got just about zero PIPA bias when I did,  
although there is - someone else loaded it in;  
I was a little suspicious, too, on the basis of  
that. You say you did get outputs from it, and  
you think we're still - the G&N is still okay?

00 22 25 02 CC Roger. Looks like it's so good, it fooled us.

00 22 25 07 LMP Okay.

00 22 25 09 CC We were thinking along the same lines as you  
were.

00 22 25 13 LMP All right. I probably ought to get an updated  
bias then.

00 22 25 17 CC Roger.

00 22 25 22 SC I show waste water quantity down to 50 percent.  
How are you doing?

00 22 25 27 CC Stand by.

00 22 25 35 LMP Can you tell me what dump line temperature is?

00 22 25 59 CC Apollo 7, Houston. I'm trying to get that in-  
formation for you; stand by.

00 22 26 24 CC Apollo 7, Houston. Your dump nozzle temperature  
is 66 degrees, and the quantity is now reading  
47.2.

00 22 26 31 LMP Roger. Thank you. We're just about in agree-  
ment with that.

00 22 26 53 CC Apollo 7, Houston. If you'll go to ACCEPT, we'll send up your NAV loads.

00 22 27 07 IMP If you have time this pass, Bill, why don't you give us an updated readout on our quad RCS quantities?

00 22 27 17 CC Your RCS propellant quantities?

00 22 27 19 IMP That's affirmative.

00 22 27 21 CC Roger. Stand by.

00 22 27 27 CC Apollo 7, Houston. We'll brief you on that just a little later.

00 22 27 31 IMP Understand.

00 22 27 49 CC Apollo 7, Houston. Will you go to ACCEPT, please?

00 22 28 40 IMP Correct telemeter.

00 22 30 22 CC Apollo 7, Houston. You are GO for a 33 dash 1.

00 22 30 25 CDR Roger. Go for 33 dash 1. Did you receive our comment? We had a flight plan update for TV UD's and will be unable to support anything but the normally scheduled flight plan activities until after the rendezvous.

00 22 30 40 CC Roger. Understand.

00 22 31 42 CC Apollo 7, Houston. I am still waiting for the exact numbers, but your RCS propellant quantity does look near nominal.

00 22 31 50 CDR Roger. Standing by.

00 22 31 54 CDR Hey, you notice any difference in the voice quality out of the spacecraft? I'm on the lightweight headset now.

00 22 32 02 CC I was reading Donn much more clearly.

00 22 32 07 CDR Understand.

00 22 32 22 CC Apollo 7, Houston. Both NAV loads and target loads are in; the computer is yours. Also, I have the - a list of the RCS usable propellants: quad A 285, B 299, C Charlie 281, D Dog 297.

00 22 32 57 SC Roger. You say 285, 299, 281, and 297. That right?

00 22 33 03 CC Apollo 7, Houston. Affirmative. And I am trying to get that converted to percent.

00 22 33 13 CDR We would like a total percentage readout on that, Bill.

CANARY (REV 15)

00 22 38 35 CC Apollo 7, Houston.

00 22 38 57 CC Apollo 7, Houston.

00 22 39 00 SC Roger. Houston, Apollo 7. Go.

00 22 39 04 CC Roger. Regarding the flight plan problem here: we would just ask to reconsider that, and it is in there at this particular time because of the passage over the site.

00 22 39 31 SC Roger. Bill, I understand. We're going to be pretty busy along about then, and I think we

are going to continue with what we had planned for normal activities.

00 22 39 52      CC      Roger. Let me go over my update again there. That time was at 23 plus 53 plus 00, and I might have sent that time up wrong. Looks like at that particular time, it could possibly be worked in.

00 22 40 31      SC      Roger. ... time, no TV till after rendezvous.

00 22 40 37      CC      Apollo 7, Houston. I have the RCS propellant usable in terms of percentage. Do you want me to read them or not?

00 22 40 43      SC      Roger. Go ahead.

00 22 40 47      CC      Roger. RCS usable remaining quad A Alfa 86.7 percent, B Bravo 91 percent, C charlie 85 percent, D Delta 90 percent.

00 22 41 41      CC      Apollo 7, Houston. I have PIPA bias update.

00 22 41 44      SC      Roger. Stand by.

00 22 41 46      SC      Go ahead, Phil.

00 22 41 48      CC      Roger. For the VERB 21 NOUN 1 enter 1720 enter, the PIPA bias is zero enter.

00 22 42 22      SC      Roger. Understand, zero enter.

00 22 42 26      CC      Roger.

00 22 43 58      CC      Apollo 7, Houston. One minute LOS Canary; Tananarive at 22 plus 59.

00 22 44 08      CDR      Roger.

## TANANARIVE (REV 15)

00 22 59 43 CC Apollo 7, Houston CAP COMM.

00 22 59 53 CC Apollo 7, Houston CAP COMM.

00 23 00 10 CC Apollo 7, Houston.

00 23 00 23 CC Apollo 7, Houston.

00 23 00 32 SC Houston, Apollo 7. How do you read me?

00 23 00 35 CC I read you five-by. How me?

00 23 00 39 CDR Roger. Reading you fine. Over.

00 23 00 41 CC Okay. Wally, I've got a T align time for you  
I'd like to pass up. We've got a short pass  
here.

00 23 00 48 CDR Go with it.

00 23 00 49 CC Roger. T align 23 plus 24 plus 08 00.

00 23 01 00 CDR Twenty-three plus 24 plus 08 00. Over

00 23 01 04 CC Roger. That's correct. Now, concerning the  
matter of the television, there's been consid-  
erable discussion here in the center. The  
Flight Director wants you to turn on the  
television at the appropriate time.

00 23 01 35 CDR Walt will be on the air shortly.

00 23 01 53 CC Okay. Wally, after this, I've got MCC1 PAD  
I'd like to give you, and if I can't give it  
here, I will give it over Carnarvon.

00 23 02 02 LMP Roger. Go with it.

00 23 02 15 LMP Go with your maneuver PAD.

00 23 02 18 CC Let's wait first and get Wally's comments on the television.

00 23 02 33 CC Okay, Walt. We'll go ahead with the MCC1 PAD here.

00 23 02 36 IMP I'm ready to copy. Go.

00 23 02 38 CC Okay. 026 24 5510 plus 00617 minus 00010 plus 01985 1960 plus 1243 01978 32398 minus 090 minus 030 010 35 1981 151 025 41 - -

00 23 03 27 CDR We can read you.

00 23 03 30 CC We've lost him.

00 23 03 34 CC - - 5500.  
CARNARVON (REV 15)

00 23 13 30 CC Apollo 7, Houston.

00 23 13 38 CDR Houston, Apollo 7. Go ahead.

00 23 13 41 CC Roger. Wally, I'd like to finish the MCC1 PAD, and could you tell me how far you copied before we got LOS Tananarive?

00 23 13 55 CDR Roger. Jack, I got 25 hours and 41 minutes on the NAV check. I didn't get the seconds. Continue after that.

00 23 14 04 CC Okay. Seconds - starting at the seconds; 5500 plus 2766 minus 05376 1226 359 284 359. You have the T align of 23 plus 24 plus 08 00.

00 23 14 34 CDR Roger. The T align was 23 plus 24 plus 08 00, MCC1 26 24 5510 plus 00617 minus 00010 plus 01985 1960 plus 1243 01978 32398 minus 090 minus

030 010 35 1981 151 025 41 5500 minus 2766 minus  
05376 1226 359 284 359. Over.

00 23 15 18 CC Roger. It's correct except the NOUN 43 the  
latitude; the sign should be plus 2766.

00 23 15 27 CDR Roger. I have plus here.

00 23 15 30 CC Okay. You got it.

00 23 15 35 CDR Houston, Apollo 7.

00 23 15 37 CC Go ahead, Wally.

00 23 15 40 CDR Roger. You've added two burns to this flight  
schedule, and you've added a urine water dump;  
and we have a new vehicle up here, and I can tell  
you this point TV will be delayed without any  
further discussion until after the rendezvous.

00 23 15 59 CC Roger. Copy.

00 23 16 02 CDR Roger.

00 23 16 07 CC Apollo 7. This is CAP COMM number 1..

00 23 16 14 CDR Roger.

00 23 16 17 CC All we've agreed to do on this is flip it.

00 23 16 18 CDR ... with two commanders, Apollo 7.

00 23 16 23 CC All we have agreed to on this particular pass  
is to flip the switch on. No other activity  
associated with TV; I think we are still obli-  
gated to do that.

00 23 16 33 CDR We do not have the equipment out; we have not  
had an opportunity to follow setting; we have  
not eaten at this point. At this point, I

have a cold. I refuse to foul up our time lines  
this way.

00 23 17 45 CC Apollo 7, Houston. Could we have opposite omni  
please and your PMP power to OX?

00 23 17 54 SC PMP going to OX now.

00 23 18 02 SC Hey, Jack. They left us without that tape re-  
corder running again on the last, - after the  
last pass. The problem we have here is I am  
hesitant to stop and COMMAND RESET and start  
tape going because you might be in the middle  
of a dump that you want to continue later.  
So we really are left without nothing - I mean  
between passes at the - tape motions left bar-  
ber pole like that.

00 23 18 26 CC Okay. We copy.

00 23 18 45 CC 7, Houston.

00 23 18 48 LMP Go ahead.

00 23 18 49 CC Walter, the reason the - you lost - you had the  
tape recorder at barber pole when you left  
Canaries; we had a power loss at Canaries just  
before LOS, and we didn't get the command to  
you. It shouldn't happen again; everybody has  
been briefed on the proper operation there.

00 23 19 10 LMP Okay, Jack. I understand. I guess - I am going  
to assume if it's barber poled after we have  
left contact with you, then it's running in a

forward direction and ready to record. Jack,  
can you verify that?

00 23 19 25 CC Stand by. Let me get the word from EECOM.

00 23 19 32 CC Okay. Walt, EECOM says that is - that assumption of yours is correct.

00 23 19 40 LMP Thank you, and for your information down there, I have yet to activate the SPS line heaters. They have been off ever since liftoff. The temperature seems to be holding very, very constant at 70, and I verified that with the oxidizing feedline temperature, also.

00 23 19 57 CC Okay. Real fine.

00 23 20 00 LMP And did you ever get the command module RCS temperatures down there during the night?

00 23 20 07 CC Yes, we did. Do you want them passed up?

00 23 20 11 LMP Negative. We are going to read those from time to time and pass them on to you.

00 23 20 15 CC Okay.

00 23 21 02 CC Apollo 7, Houston. We would like to have your TIM switch switched to LOW.

00 23 21 14 SC ... in RESET to stop the motion.

HONEYSUCKLE (REV 15)

00 23 21 30 CC Apollo 7, Houston.

00 23 24 07 CC Apollo 7, Houston.

00 23 33 52 CC Apollo 7, Houston.

00 23 33 55 SC ...

00 23 33 56 CC Roger. Wally, I'd like to finish the MCC1  
PAD, and can you tell me how far you copied  
before we got to LOS Tananarive?

00 23 34 07 CDR Roger. Jack, I got 25 hours, 41 minutes of the  
MAP check; I didn't get the seconds to continue  
after that.

00 23 34 15 CC Okay. Seconds ... 5500 plus 2766 minus 05376  
1226 359 284 359. You have the key align 23  
plus 24 plus 0800.

00 23 34 44 CDR Roger. Key align 23 plus 24 plus 0300 MCC1  
26 24 5510 plus 00617 minus 0010 plus 01985 1960  
plus 1243 01978 32398 minus 090 minus 030 010  
35 1981 151 025 41 5500 minus 2766 minus 05376  
1226 359 284 359. Over.

00 23 35 27 CC Roger. It's correct except the NOUN 43; the  
latitude sign should be plus 2766:  
HUNTSVILLE through BERMUDA (REV 15)

00 23 50 05 CC Huntsville AOS.

00 23 50 22 CC Apollo 7, Houston.

00 23 50 42 SC Huntsville LOS.

00 23 51 22 CC Apollo 7, Houston.

00 23 51 24 SC Go ahead, Houston.

00 23 51 27 CC Roger. Wally, we have some information on your  
evaporator and ECS procedures for and during  
the rendezvous here.

00 23 51 39 CC

We would like for you to stay in your present configuration using the primary system with the radiators. If the evaporator, or primary evaporator, or ALTI temperature goes higher than 60 degrees, we would like for you to activate the primary evaporator then. And if it doesn't work, we would like for you to reservice that primary evaporator and shut it down. Activate the secondary coolant loop with the radiator bypass.

00 23 52 10 LMP

Roger. Understand. Additional SOP and one question, did you say the glycol evaporator outlet temperature above 60 or the radiator outlet temperature above 60? Over.

00 23 52 29 CC

Walt, the evaporator outlet temperature greater than 60.

00 23 52 33 LMP

Roger. Understand. Evaporator outlet greater than 60 and activate the primary water boiler; if it doesn't work again, I'll reservice it. Shut it down and activate secondary coolant loop with the radiator bypass.

00 23 52 47 CC

Roger.

00 23 54 24 SC

Houston, Apollo 7. I have the PMP back to normal after that last pass.

00 23 54 29 CC

Roger. Copy.

HUNTSVILLE through BERMUDA (REV 16)

00 23 55 28 CC Computer to you 23 hours and 56 minutes ...

00 23 56 34 SC Roger. FOO the computer.

00 23 57 39 SC Roger, PAD 39. Hack it at 23 hours 57 minutes.

00 23 59 53 CC Apollo 7, Houston.

00 23 59 57 SC Roger. Sounds like you're having a ball down there.

01 00 00 00 CC Roger. We just want you to know your key align for your REFSMMAT compares favorably with ours down here.

01 00 00 05 CDR Thank you ... we're just going by overhead, just skimming the Gulf Coast right over the water.

HUNTSVILLE through BERMUDA (REV 16)

01 00 00 18 CC How does the weather look?

01 00 00 21 CDR Not bad. About six to four-tenths scattered stratocumulus just coming in across Tallahassee at this point. See a little breakwater just south of there and the jet . . . going down to Orlando down by the ocean.

01 00 00 34 CC Roger.

01 00 00 39 SC Just took a picture of the breakwater for you. That's frame . . .

01 00 00 48 CC Did you request Crestview direct to Orlando?

01 00 53 SC We use (laughter) Tallahassee direct to Canaries.

01 00 01 14 SC Right north of Daytona W, just about over Jacksonville, I guess. The sky is about three-tenths coverage, but the Cape is out in the clear. Do you have anything else you want to send up? It's a good day for it.

01 00 01 28 CC Nothing right now.

01 00 01 32 CC We'll have you almost continuous coverage here through Canaries for another 15 minutes or so.

01 00 01 39 SC Roger. I've got to get back to the store here and get this little food down.

01 00 01 46 CC Okay. We'll stand by.

01 00 02 56 CC Apollo 7, Houston. Opposite omni.

01 00 08 10 SC Twenty-four hours and 6 minutes into the flight, five clicks on the water gun for the IMF.

01 00 08 17 CC Roger. Copy.

01 00 08 33 SC Computer ... in the computer for the PIPA test.

CANARY (REV 16)

01 00 16 00 CC Apollo 7, Houston. Opposite omni.

01 00 18 20 CC Apollo 7, Houston. One minute LOS Canary; we'll pick you up at Tananarive in about 15 minutes.

TANANARIVE (REV 16)

01 00 32 19 CC Apollo 7, Houston through Tananarive.

01 00 32 22 CDR Roger. Loud and clear.

01 00 32 24 CC You're five-by, also. We'll have continuous coverage here through Carnarvon. ARIA 2 comes up when we lose Tananarive in about 8 minutes.

01 00 32 36 CDR Roger. We have an observation for you. It's a confusing thing, we concede; but every time we have transit at sunset or at sunrise, the particles that we have dumped through the dump system illuminate brightly as we have seen in the past. These affect the sextant and telescope observations severely.

01 00 33 06 CC Wally, I didn't quite get it. Are you saying that the dumps are affecting the sextant operation or is that --

01 00 33 14 CDR The reflection off the particles that came out

the rear deck on water dump.

01 00 33 22 CC Roger. Copy.

01 00 33 24 CDR ... stars, this would be a problem when we don't have the earth to block out the sun.

01 00 33 31 CC Okay. Copy.

01 00 33 33 SC I would like to get that info to flight planning for subsequent flights. The recommendation was not to dump urine or water prior to a required sighting.

01 00 33 44 CC Okay. Copy that.

01 00 33 47 CDR Roger.

01 00 34 08 CDR Houston, Apollo 7.

01 00 34 10 CC Roger. Go ahead.

01 00 34 12 CDR We have a COAS alignment for you.

01 00 34 15 CC Okay. Go ahead.

01 00 34 17 CDR To place the X-axis of the spacecraft on target, the target must be located in the upper right quadrant - the so-called northeast quadrant up 1 degree and right 1 degree.

01 00 34 38 CC Roger. Copy.

01 00 36 07 CMP This is Apollo 7. I have the results of the command module RCS temperature check.

01 00 36 13 CC Say again, 7.

01 00 36 16 CMP I have the results from the command module RCS temperature check I've just completed. You may copy.

01 00 36 21 CC Go ahead.

01 00 36 23 CMP Roger. 5C and D and 6B, C, and D are all  
5 volts. 6A is reading 4.90 volts.

01 00 36 36 CC Roger. Copy.  
ARIA (REV 16)

01 00 42 38 CC ARIA 2. Go REMOTE.

01 00 43 03 CC Apollo 7, Houston through ARIA 2. Standing by.

01 00 43 10 LMP ...

01 00 43 12 CC Okay. Walt, you're five-by. We're standing by.

01 00 45 29 CT ARIA 2 has acquisition, dropping in and out  
right at this time.

01 00 46 34 CT ARIA 2 has two-way lock; ARIA 2 has two-way  
lock.  
CARNARVON (REV 16)

01 00 50 35 CC Apollo 7, Houston through Carnarvon. Standbying  
by. Stand by.

01 00 50 41 LMP Roger. Read you loud and clear.

01 00 50 43 CC You're five-by.

01 00 50 49 CC Walt, we pick up Honeysuckle in about 5 minutes.  
You might want to turn up your S-band at that  
time.

01 00 51 08 LMP Roger. I give you and O<sub>2</sub> partial pressure  
reading of 200 mm of mercury.

01 00 51 13 CC Say again.

01 00 51 16 LMP O<sub>2</sub> partial pressure, 200 mm of mercury.

01 00 51 19 CC Okay. Copy that.

O

01 00 51 25 LMP Jack, I think you were breaking up. Did you say we should probably bring up S-band on this pass?

01 00 51 30 CC We pick up Honeysuckle in at 55 here. You can turn up S-band volume if you want.

01 00 51 37 LMP Roger.

01 00 51 43 LMP By the way, how does S-band sound to you down there today?

01 00 51 46 CC Everything sounds real good. It is a real nice COMM.

01 00 51 52 LMP Very good. We were surprised you fellows started talking over Tananarive this morning.

01 00 51 57 CC Roger.

e

01 00 51 59 LMP That was pretty bad yesterday.

01 00 53 29 CC Apollo 7, Houston. Could we switch your BIOMED switch to the commander?

01 00 53 36 CDR Roger. My pulse is down now.

01 00 53 38 CC Okay.

01 00 54 17 CDR Houston, Apollo 7.

01 00 54 19 CC Go ahead.

01 00 54 21 CDR Did you validate the BC ... 0197.8, is that correct?

01 00 54 29 CC Stand by.

01 00 55 01 CC Apollo 7, Houston. That is the correct number at this time. We expect update, though, as we progress.

C

01 00 55 10 CDR Roger.  
HONEYSUCKLE (REV 16)

01 00 57 00 CDR Houston, Apollo 7.

01 00 57 02 CC Go ahead.

01 00 57 03 CDR Roger. Just before band check, we're GO.

01 00 57 06 CC Roger. Copy.

01 00 57 52 CDR Jack, could you give us an update on our ascending node?

01 00 57 59 CC Roger. You want a chart update, is that -

01 00 58 03 CDR That's affirm.

01 00 58 04 CC Okay. Stand by.

01 00 59 04 CC Apollo 7, Houston. I have the orbital map update.

01 00 59 10 CDR Go ahead.

01 00 59 11 CC Roger. For REV 16, the GMT of the node will be 25 plus 12 plus 45, longitude will be 168.5 west, a right ascension 06 plus 27.

01 00 59 36 CDR Roger. Right ascension 06 and 27, and the crossing on the map is 25 plus 12 plus 45, 168.5 west.

01 00 59 48 CC Roger.

01 00 59 54 CDR Jack, on the cold I have, I took two aspirin before sleep last night and one Actifed. That is the total dose so far. Should I take another Actifed during this period?

01 01 00 07 CC Dr. Berry says, "Yes. Take another one during this period."

01 01 00 11 CDR Wilco.

01 01 00 19 SC And we are currently doing the oxygen part of P5.8.

HAWAII through BERMUDA (REV 16)

01 01 16 31 CC Apollo 7, Houston.

01 01 16 34 CDR Roger, Houston.

01 01 16 38 CC Apollo 7. We're going to pass - the present plans now are to pass the three NAV loads up to you - send three NAV loads up to you over Texas. Can you tell me how your last P52 came out?

01 01 17 01 CDR Roger. Jack, the P52 came out fine. We got five balls star difference and ... No problem with the optics. There will be ... and all came out fine.

01 01 17 17 CC Okay. That's real good news. We'll expect you to be in P00 sometime around 25 33 for these command uploads here.

01 01 17 29 CDR Fine.

01 01 17 30 CC Okay. One other message here this morning: the flight of Apollo 7 dominates the news this morning. We received a number of special messages regarding the flight, including one from President Johnson, who watched the launch

on television at the White House. Here is his message to you. "Congratulations on the splendid beginning of this Apollo 7 flight. The nation is proud of you and the many in NASA, the services, and the private companies which have combined to make such a successful manned space flight. Everything in the President's office came to a halt as I and the Foreign Minister, Debret, of France watched with mounting excitement the magnificent launch of the Saturn IB. You can well imagine the great pleasure which filled the room as word came of your successful insertion into orbit. The path to the moon takes courage, ability, and devotion to our goal. You are making a major stride in this star-studded way." Also, we received another message from Vice-President Humphrey, the Head of the Space Council, which says that the nation is proud of Apollo 7. Also, the Olympic Games start today in Mexico City. We'll keep you posted on the result.

01 01 19 01	CMP	Roger. Thank you.
01 01 19 03	CC	Roger.
01 01 19 05	CMP	Hey, Jack, I just finished the CRYO fuel G test for the oxygen tanks at the 90-percent level, and it looked like there was very noticeable

stratification at 910 psi. When I turned the heaters off and the fans on, the surface dropped in the left tank down to 860 and the right tank down to 850. All heaters and fans are back on AUTO now.

01 01 19 29 CC Okay. Roger. We copy.

01 01 19 33 CDR Jack, we look very good up here, and we've had our little crises, but ...

01 01 19 43 CC Roger. Thank you.

01 01 19 45 CDR Jack, we just had a program alarm 1105 down-link 25. Could you have somebody check that out for us?

01 01 19 53 CC Okay. We copy that. We'll check it out.

01 01 19 56 CDR Roger.

01 01 26 52 CC Apollo 7, Houston.

01 01 26 55 CMP Roger.

01 01 26 57 CC Roger. Donn, we would like you to key in ENTER so that we can look and see whether there were any additional program alarms.

01 01 27 08 CMP Okay. Jack, I did, and nothing came up.

01 01 27 11 CC Okay. Real fine.

01 01 29 03 CC Apollo 7, Houston.

01 01 29 06 CMP Go ahead, Houston.

01 01 29 08 CC Roger. If you will hit the RESET button, we can get rid of that program alarm 1105.

01 01 30 13 CC Apollo 7, Houston.

01 01 30 16 CMP Go ahead, Jack.

01 01 30 17 CC Roger. If you will go to ACCEPT, we will send you up those three updates.

01 01 30 23 CMP Roger. You got it.

01 01 30 25 CC Okay.

01 01 31 08 CC Apollo 7, Houston. I have the MCC1 maneuver update that I'd like to give you whenever you're ready to copy.

01 01 31 20 CMP Understand. This is an improvement on the last one?

01 01 31 22 CC Yes, sir.

01 01 31 23 CMP Ready to copy.

01 01 31 25 CC Roger. MCC1 026 24 5520 plus 00635 minus 00013 plus 019 63 1961 plus 1252 019 62 32339 minus 090 minus 030 010 35 19 92 162 025 42 all balls plus 2756 minus 05340 1225 358 285 359. Remarks: posigrade, pitch down 70 degrees, heads up.

01 01 32 48 CMP Roger. Readback follows: MCC1 026 24 5520 plus 00635 minus 00013 plus 019 63 1961 plus 1252 019 63 1961 plus 1252 019 62 32339 minus 090 minus 030 010 35 19 92 162 025 42 0000 plus 2756 minus 05340 1225 358 285 359. It's a posigrade, pitch down 70 degrees, heads up.

Over.

01 01-33 42 CC Roger. That's correct. Thank you.

01 01 34 30 CDR Houston, Apollo 7.

01 01 34 32 CC Go ahead.

01 01 34 36 CC Apollo 7, Houston. Go.

01 01 34 38 CDR Roger. Were you trying to send us some piano music then?

01 01 34 45 CC Yes, we were trying to send you a NAV update for the CSM and target. And, 7, your sextant star check will not be visible after 26 plus 18 plus 00.

01 01 35 10 CDR Roger. Twenty-six plus 18. Say, can you work up one for the COAS?

01 01 35 16 CC Roger. Stand by.

01 01 35 24 CC Apollo 7. There was no COAS star available at that attitude.

01 01 35 31 CDR Roger.

01 01 36 29 CC Apollo 7, Houston. Our NAV loads are in and verified; the computer is yours.

01 01 36 37 LMP Roger. We've got it. Thank you.

01 01 36 42 LMP And, Jack, we'll be standing by for when we go ahead and restow the cabin gas analyzers and have it out of our way.

01 01 36 51 CC Roger.

01 01 37 09 CC Apollo 7, Houston. You can go ahead and stow the cabin gas analyzers.

01 01 37 13 IMP Roger. Thank you. I'll give you one final reading.

01 01 37 16 CC Okay.

01 01 37 41 LMP Do you receive, Jack, 210?

01 01 37 44 CC Say again.

01 01 37 47 LMP 210 mm of mercury.

01 01 37 49 CC Roger. Copy.

01 01 41 54 CC Apollo 7, Houston. Opposite omni.

01 01 42 10 CC Apollo 7. One minute LOS.

CANARY (REV 17)

01 01 48 59 CC Apollo 7, Houston through Canary. Standing by.

01 01 49 03 CDR Roger. We'll try to give that attitude now.

01 01 49 06 CC Roger. Could we get you to switch the BIOMED switch to the LMP?

01 01 49 14 CDR You say I'm kind of dull today? You've got it.

01 01 49 19 CC Roger. Thank you.

01 01 49 21 CDR We're still in 8 hours of our prime time.

01 01 49 24 CC Roger.

01 01 50 22 CC 7, you're 1 minute LOS; we'll pick you up at Ascension in about 3 minutes.

01 01 50 27 CDR Roger. We're in good shape here.

ASCENSION (REV 17)

01 01 53 51 CC Apollo 7, Houston through Ascension. Standing by.

01 01 53 56 CDR Roger.

01 01 55 57 CC Apollo 7, Houston. One minute LOS; pick you up at Tananarive in 10 minutes.

01 01 56 02 CDR Roger.  
TANANARIVE (REV 17)

01 02 06 23 CC Apollo 7, Houston through Tananarive. Standing  
by.

01 02 06 43 CC Apollo 7, Houston through Tananarive.

01 02 06 47 CDR Roger, Houston. How do you read?

01 02 06 49 CC You're five-by. We're standing by.

01 02 06 51 CDR Roger. Checking our sextants.

01 02 06 54 CC Roger.

01 02 07 57 LMP ... less than one-half.

01 02 08 03 CC Roger. We copy.

01 02 13 24 SC ...

01 02 13 43 CC Apollo 7, Houston. You're 1 minute LOS Tanan-  
arive. We'll pick up ARIA 2 in about 2 minutes;  
have continuous coverage through Carnarvon.

01 02 13 53 CDR Roger. ...

01 02 14 02 CC Roger. I couldn't copy that, Wally.

01 02 14 04 CDR Roger. I better go through ...

01 02 14 08 CC Roger.

01 02 14 09 CDR Keep coming down live to you.

01 02 14 11 CC Okay.

ARIA 2 (REV 17)

01 02 15 35 CC ARIA 2, go REMOTE.

01 02 16 30 CC Apollo 7, Houston through ARIA 2. Standing by.

01 02 17 05 CC Apollo 7, Houston through ARIA 2. Standing by.

01 02 17 12 SC ...

01 02 17 15 CC Roger. Copy.

01 02 17 23 CC ARIA 2 has AOS. ARIA 2 has AOS.

01 02 19 17 SC ...

CARNARVON (REV 17)

01 02 22 42 CC Apollo 7, Houston..

01 02 22 45 SC Roger. ...

01 02 22 47 CC Roger. I will give you that time hack at T minus  
2 minutes.

01 02 22 51 SC Roger.

01 02 22 53 CC Two, one.

01 02 22 55 CC MARK.

01 02 22 56 CC T minus 2 minutes.

01 02 22 58 CDR Very good.

01 02 22 59 CC FDAI scale 55.

01 02 23 01 CC DELTA-V sets A and B, normal.

01 02 23 04 CMP A normal, B normal.

01 02 23 09 CC Hand control ON.

01 02 23 13 CMP Roger. ON.

01 02 23 14 CC Number 2, standing by for 30 seconds.

01 02 23 17 CMP Roger.

01 02 23 50 CMP ... And standing by for 30.

01 02 23 56 CC Minus 6C.

01 02 23 58 CMP Roger.

01 02 24 26 CMP Thirty seconds.

01 02 24 28 CC EMS, DELTA-V on AUTO.

01 02 24 30 CMP AUTO.

01 02 24 31 CC Roger. Full charge in 15 seconds. You hitting when you have 5 seconds, Donn?

01 02 24 34 IMP Roger. I'll hit the ENTER.

01 02 24 38 CC You have got one count on the PIPA.

01 02 24 40 SC ...

01 02 24 45 CC Ten, nine, eight, seven, six, five, four, three, two, one, zero.

01 02 24 57 CDR Tested. Like a bomb, yabadabadoo! Great, man! That's like a ride and a half down there, gang.

01 02 25 13 CC Roger. Copy that.

01 02 25 17 CC Spacecraft control SPS.

01 02 25 20 SC I switched gimbals, Walt.

01 02 25 38 IMP Get ready for DELTA-V correction.

01 02 25 58 IMP Burning left 1.2, burning up 1.9, and we burn aft 2.4.

01 02 26 06 CC Roger. Copy that.

01 02 26 33 IMP Roger. We are burning down to plus four balls 1, minus four balls 3, plus four balls 4. We are going to quit here.

01 02 26 42 CC We copied real fine.

01 02 26 44 CDR Recounter residuals minus nine plus nine.

01 02 26 48 CC Roger. Copy that.

01 02 26 53 CDR Gimbal motors are all OFF. Circuit breakers OPEN. ... direct OFF, LC OFF.

01 02 27 13 CDR Houston, Apollo 7.

01 02 27 15 CC Go ahead.

01 02 27 17 CDR Give you a plus one on that. That's a real  
kick in the center. That really socks it  
to you.

01 02 27 22 CC Roger.

01 02 27 24 CDR A very sudden start that's like a hydraulic  
catapult - almost like a steam cap.

01 02 27 33 CC Okay. I can't help you out on any comparison  
there, Wally.

01 02 27 44 CDR This is Apollo 7. We are now drying off our  
hands.

01 02 27 47 CC Roger. (Laughter)

01 02 30 25 CC You are about 30 seconds to LOS in Carnarvon.  
We will pick you up at Hawaii in about 18 min-  
utes.

01 02 30 34 CDR Roger.

01 02 30 38 CC Everything looked real fine down here.

01 02 30 41 CDR Did up here ... Surprised at the instantaneous  
start.

01 02 30 46 CC Roger.

ARIA 3 (REV 17)

01 02 34 01 CC ARIA 3. Go REMOTE.

01 02 34 28 CC Apollo 7, this is Houston. We will be monitor-  
ing through ARIA 3 at this time.

HAWAII (REV 17)

01 02 48 32 CC Apollo 7, through Hawaii. Standing by.

01 02 48 35 CMP Roger. Jack, I just did a preliminary T dash 20

to look at the booster, and I think I saw it, but it was a little hard to tell because of all the debris I've been picking up since sunrise. ... point light source, and I'm sure that is it. Like I said, there is a lot of trash and debris ... it's kind of hard to tell.

01 02 49 08 CC Okay. Roger. We copy that, Donn.

GOLDSTONE through ANTIGUA (REV 17)

01 03 01 43 LMP Hello, Houston, Apollo 7. Do you read?

01 03 01 46 CC Read you five-by, 7.

01 03 01 56 CC Apollo 7, Houston.

01 03 01 58 LMP Roger. At 27 hours into the flight, we're fixing to take some pictures of the ...

01 03 02 08 CC Roger. Understand. And, wait, over Texas in in about 3 minutes, we're going to have three NAV loads that we'd like to send you. There will be no NCC2 maneuver, and I'll pass you your maneuver PAD as soon as I get it.

01 03 02 29 LMP Roger. Waiting and ready.

01 03 02 34 LMP About 3 minutes, we got a completion statement.

01 03 05 21 CC Apollo 7, Houston. We would like to send you your three up posts. Would you go to ACCEPT, please?

01 03 05 28 CDR ACCEPT. We are in ACCEPT.

01 03 05 33 CC Roger. Copy. Coming up.

01 03 06 33 LMP Apollo 7. Proceeding down trip to direct Houston.

01 03 06 37 CC Roger. Copy.

01 03 06 58 LMP Hey, Jack, when we go past Houston, run outside and wave, will you. We want to look at you in the sextant.

01 03 07 09 LMP And when you get back in, Jack, why don't you have the EECOM take a look at the performance of the fuel values and if they are matching up my performance curves.

01 03 07 20 CC Say again about the fuel cells, Walt.

01 03 07 23 LMP How about having someone take a look at how they are doing with the specs on the performance curves. Looks a little low to me.

01 03 07 28 CC Okay. Will do.

01 03 08 26 LMP Apollo 7. Just cleared New Orleans; going direct to Orlando.

01 03 08 31 CC Roger. Copy.

01 03 09 06 CC Apollo 7, Houston. I have your NSR PAD that I'll give to you whenever you are ready.

01 03 09 16 LMP Ready to copy. Go.

01 03 09 17 CC Roger. NSR 028 00 5000 minus 00927 plus 00013 minus 01486 1536 plus 1139 01649 31599 minus 086 minus 040 008 NA NA NA 027 17 0000 plus 1959 minus 055534 1750 001 096 000. Remarks: retrograde pitched up 55 degrees, heads down.

01 03 10 38 LMP Roger. Say again after NA, and it seems to me the CAP COMM's - there is a difference in purpose here - I think you're giving an NA for each line.

01 03 10 51 CC Roger. Let me read after the burn time. Burn time is 0 plus 08 NA NA NA. Do you want - did you get copy NOUN 34 NOUN 43?

01 03 11 06 LMP Did not.

01 03 11 07 CC Okay. 027 17 all balls plus 1959 minus 05534 1750 001 096 000. I have a correction on the NOUN 33 time. That should be - the second should read 5600.

01 03 11 42 LMP Roger. Readback follows: NSR 028 00 5600 minus 00927 plus 00013 minus 01486 1536 plus 1139 01649 31599 minus 086 minus 040 008 no sextant star 027 17 0000 plus 1959 minus 05534 1750 001 096 000 retrograde pitched up 55 heads down. Over.

GOLDSTONE through ANTIGUA (REV 18)

01 03 12 28 CC Roger. I have the boresight star for you. That's 045 plus 278 up 0.2 left.

01 03 12 45 LMP Roger. Star 45 plus 278 up and 0.2 left. Where is the decimal on the up?

01 03 12 53 CC 27.8.

01 03 12 57 LMP 27.8. Thank you.

01 03 12 59 CDR Jack, do you mean 27. or 2.78?

01 03 13 03 CC 27.8.

01 03 13 06 CDR Thank you.

01 03 13 17 CDR Houston, Apollo 7. We completed a series of photographs from the Hawaiian Islands across the Gulf Coast, Houston, New Orleans, St. Petersburg, Tampa, Orlando, Cape Patrick, into the Grand Bahamas ...

01 03 13 42 CC Wally, you were a little bit garbled. I didn't catch you.

01 03 13 47 CDR Roger. We continued from the Hawaiian Islands, across the Gulf Coast, through Florida to Grand Bahama on magazine Peter at that time, P as in Peter.

01 03 13 57 CC Oh, Roger. Copy that now.

01 03 14 01 CDR ...

01 03 14 03 CC Okay.

01 03 14 05 CDR ... across the Gulf Coast today.

01 03 14 11 CC Apollo 7. All three loads are in and verified. Computer is yours.

01 03 14 17 CDR We've got it. Thank you.

01 03 19 26 CC Apollo 7, Houston. One minute LOS; we'll pick you up at Ascension in 5 minutes.

01 03 19 31 CDR Roger.  
ASCENSION (REV 18)

01 03 25 37 CC Apollo 7, Houston through Ascension.

01 03 25 42 LMP Roger. Would you mark 20 clicks of water for CDR? Over ...

01 03 25 50 CC How many clicks of water?

01 03 25 52 LMP Twenty.

01 03 25 53 CC Twenty. Roger. Copy. And on the fuel cell performance: we are finding the fuel cells are right on nominal; however, we are going to continue to monitor the performance as we go along here.

01 03 26 08 CDR Roger. He's doing a pretty good job today.

01 03 26 12 CC Thank you. You guys are, too.

01 03 26 15 CDR Jack, how are we looking on our fuel budget?

01 03 26 20 CC Could you say again, Walt?

01 03 26 21 CDR This is Wally. How are we doing on our fuel budget?

01 03 26 26 CC Okay. Just a minute. We'll get it right to you.

01 03 26 30 CDR ...

01 03 26 37 CC Wally, on the RCS budget: we think we'll be right on nominal going into TPI.

01 03 26 46 CDR Great.

01 03 26 48 CDR And Jack, okay, we've got our tape back now, I guess, or are we dumping it if we use another 32 pass again with no tape to log that stuff on.

01 03 26 58 CC Okay.

01 03 34 08 CC Apollo 7, you are 1 minute LOS Ascension; we'll pick you up in Tananarive in 8 minutes.

## TANANARIVE (REV 18)

01 03 43 05 CC Apollo 7, Houston through Tananarive.

01 03 43 32 CC Apollo 7, Houston through Tananarive.

01 03 43 58 CC Apollo 7, Houston through Tananarive.

01 03 44 05 CC Apollo 7, Houston through Tananarive.

01 03 46 20 CC Apollo 7, Houston.

01 03 46 24 LMP Roger. Houston, Apollo 7. Reading you loud  
and clear. How me? Over.

01 03 46 27 CC You are five-by now, Walt. We would like you  
to put your up-telemetry switch to COMMAND  
RESET, then NORMAL. We missed the command going  
out of Ascension.

01 03 46 41 LMP Roger. Telemetry RESET and then NORMAL.

01 03 46 44 CC Roger. And you will be omni A for the burn.

01 03 46 48 LMP Roger.

01 03 49 00 CC Apollo 7, Houston. You are 1 minute LOS to  
Tananarive; we pick you up over Carnarvon in  
about 7 minutes.

01 03 49 09 SC Roger. Will we be in touch during the burn?

01 03 49 18 CC Say again.

01 03 49 20 SC Will we be in touch during the burn?

01 03 49 22 CC Yes, sir, you will.

01 03 56 42 SC ... pitch 2, ...

01 03 56 52 CC Apollo 7, Houston.

01 03 56 56 SC Roger. Stand by ...

## CARNARVON (REV 18)

01 03 57 53 CC Apollo 7, Houston. Reading you five-by. I'll give you a MARK at 2 minutes.

01 03 57 58 SC Roger.

01 03 58 53 CC Three, two, one.

01 03 58 56 CC MARK.

01 03 58 57 SC T minus 2 minutes.

01 03 58 59 SC SCAI, scale 55. ... A and B normal, A normal, B normal.

01 03 59 12 CC End controllers ON. Standing by for 30 seconds.

01 03 59 56 CC Minus 1 minute.

01 03 59 59 SC Roger. One minute.

01 04 00 29 SC T and S DELTA-V AUTO.

01 04 00 32 CC Check.

01 04 00 36 SC Roger. That's at the count of four, five now ...

01 04 00 46 CC Ten, nine, eight, seven, six, five, four, three, two, one, zero.

01 04 00 57 CC Testing. --

01 04 00 58 SC Burn complete, all four balls - out.

01 04 01 12 CC Roger. Copy.

01 04 01 16 CMP DELTA-V thrust A and V OFF.

01 04 01 18 CDR Roger. Pitch 1 OFF, yaw 1 OFF, pitch 2 OFF, yaw 2 OFF.

01 04 02 28 CMP Residuals are plus four balls 1 plus five balls plus four balls 2, and we burnt about a total of 6 feet per second. ...

01 04 02 39 CC Roger. Copy.

01 04 02 42 CDR Residuals minus 9.9.

01 04 02 46 CC Okay. Copy that.

01 04 02 48 CDR ...

01 04 02 51 CC Same exact number.

01 04 02 57 CDR ...

01 04 03 45 CMP Houston, Apollo 7. Wish to commence battery charging on battery A; I would say a curve right now of about 2.3.

01 04 03 55 CC Roger.

01 04 05 10 CC Apollo 7, Houston. We're about 1 minute LOS Carnarvon. In 2 minutes, we'll pick up ARIA 3 for about 10 minutes monitor pass, and going over the hill here, it looks like a real good burn.

01 04 05 24 CDR Roger.  
ARIA 3 (REV 18)

01 04 10 00 CC Apollo 7, Houston through ARIA 3. Standing by.

01 04 10 07 CDR Roger. Thank you.  
GUAM (REV 18)

01 04 13 22 CC Apollo 7, Houston through Guam. Standing by.

01 04 13 27 CDR Roger.

01 04 16 04 CC Apollo 7, Houston. One minute LOS Guam; Hawaii in 8 minutes.

01 04 16 09 CDR Roger.

01 04 16 11 CMP Roger. Jack, I've got the target instructions;

it seems to be tracking pretty smooth now. I loaded in 29 hours, 20 minutes for first cutoff, TPI, and I got 29, 20, and 29 seconds back. Not too bad for a start.

01 04 16 27 CC

Not too bad.

HAWAII (REV 18)

01 04 23 33 CC

Apollo 7 through Hawaii. Standing by.

01 04 23 37 CDR

Thank you.

01 04 23 40 CMP

Jack, I've got about 8 minutes here ... The thing is really taking in there, right on the money.

01 04 23 53 CC

Roger. You're fading in and out, but I think I got it. You're tracking okay.

HUNTSVILLE through ANTIGUA (REV 18)

01 04 31 45 CC

Huntsville two-way lock, out of range.

01 04 33 38 CDR

Houston, Apollo 7.

01 04 33 41 CC

Apollo 7, Houston. Go ahead.

01 04 33 43 CDR

Why can't we get the RECORD mode here? Donn has got a lot of comments he ought to be putting on tape.

01 04 33 51 CC

Thank you.

01 04 33 59 CDR

... Are you recording this down there?

01 04 34 01 CC

Are we recording?

01 04 34 03 CMP

Roger. I'm almost 2 minutes into this TPI solution here, and it seems like quite awhile. I was wondering when you are planning to take it off.

01 04 34 14 CC Roger. Donn, we're trying to mark the polar plot along with you here as you go through the solution.

01 04 34 22 CMP Whenever we call P34 or some such thing, you can expect it to drop the tracking or move off some, and then it will return after you get back to the basic program. For instance, the P34 solution just came back, and before we got it ... target ... Also, I did an attitude maneuver of 3 or 4 degrees a minute ago which kind of started me ...

01 04 34 55 CC Roger.

01 04 36 18 CC Apollo 7, Houston.

01 04 36 20 LMP Roger.

01 04 36 21 CC Roger. Walt, we'll have a clean tape for you to record the rendezvous on at Antigua LOS which occurs about 28.54.

01 04 36 32 LMP Roger. 28.54.

01 04 36 35 CC Roger.

HUNTSVILLE through ANTIGUA (REV 19)

01 04 48 59 CC Apollo 7, Houston. I have you TPI update PAD. I will give you when you are ready to copy.

01 04 49 09 LMP Ready to copy. Go.

01 04 49 12 CC Roger. 029 183400 plus 150 plus 019 minus 075, 168/46 forward, 020/11 right, 003/03 down,

075/08, 01960 minus 0729 02240 35950 133 trun-  
nion check. The GET of midcourse 029 plus 23  
plus 00. Remarks: you will be flat at TPI.

01 04 50 20 IMP Roger. That's flat at TPI midcourse. 029 plus  
23 plus 00, TPI update follows: 029 183400  
plus 150 plus 019 minus 075 168 46 forward 020  
11 right 003 03 down 075 08 01960 minus 0729  
minus 0240 35950 133 on the trunnion. Over.

01 04 50 57 CC Roger. Your elevation minus 5 minutes, I copy;  
it should be 02240.

01 04 51 08 LMP Is that - oh - 02240.

01 04 51 12 CC Roger. Everything else correct. I'll give you  
a DELTA- $V_M$  cutoff in a minute.

01 04 51 19 CC Your DELTA- $V_M$  cutoff will be 90.

01 04 51 22 LMP Ninety, read.

01 04 53 02 CC Apollo 7, Houston.

01 04 53 06 IMP Go ahead.

01 04 53 07 CC Roger. Walt, you have a clean tape on the DSE.  
You should have three switches in proper posi-  
tion there. TELEMETRY INPUT should be HIGH.  
Your FORWARD REWIND switch should be OFF, your  
UP-TELEMETRY switch - COMMAND RESET to NORMAL.  
When you want to record, then cycle the FORWARD  
REWIND switch to FORWARD, then OFF.

01 04 53 31 IMP Roger. But we don't want to be recording at  
PCM HIGH yet; we want to still get all the  
RCS burns on high bit rate. Over.

01 04 53 39 CC Okay. Stand by.

01 04 53 54 CC Okay, Apollo 7. You are GO the way you want to do it. We'll have a mixed dump, but that will be okay.

01 04 54 03 LMP Roger. Do you understand that I'll be going - I'll be stopping the tape and going to high bit rate for each of the RCS burns; and after the last RCS burn, I'll run at high bit rate right on into the rendezvous till the tape is up?

01 04 54 18 CC Roger. We understand that.  
ASCENSION (REV 19)

01 05 02 25 CC Apollo 7, Houston through Ascension. Standing by.

01 05 02 30 IMP Roger.

01 05 03 38 CC Apollo 7, Houston.

01 05 03 50 CC Apollo 7, Houston.

01 05 03 56 CDR Go ahead, Houston.

01 05 03 58 CC Just for your information only, the tracking data across the States indicates that TPI could occur about 30 seconds earlier. All our other values remain unchanged.

01 05 04 10 CDR Roger.

01 05 04 23 CMP Roger. We show 16 plus 45 on our solution.

01 05 04 28 CC Roger.

01 05 05 40 CDR I'll give you MARK at 11 now, 7. I'll give you  
a MARK at 11.

01 05 05 47 CDR MARK.

01 05 05 50 CDR Okay. It's 28. I'll give you ten, 30, or  
do you want ten?

01 05 05 58 CDR Okay.

01 05 06 04 CDR Thirty-five seconds.

01 05 06 38 CC Ten seconds, three, two, one.

01 05 06 48 CDR MARK.

01 05 07 31 CDR Are they good numbers?

01 05 08 12 CC Apollo 7, Houston. Tananarive in 10 minutes.  
TANANARIVE (REV 19)

01 05 19 37 CC Apollo 7, Houston through Tananarive. Standing  
by.

01 05 19 41 CDR Roger. ...

01 05 19 44 LMP ...

01 05 20 38 CC Walt, we've got real bad COMM here at Tananarive.  
We can read you saying something, but we can't  
make it out.

01 05 20 47 LMP ...

01 05 20 59 CC We couldn't make it out. We made out the word  
TPI, and that was all.

01 05 21 12 CC Can you confirm that you've burned TPI?

01 05 21 15 LMP ... yes.

01 05 21 17 CC Roger. We got it. Thank you.

01 05 21 40 SC This is Apollo 7. Three, two, one.

01 05 21 47 SC MARK.

01 05 23 57 CC Apollo 7, Houston. We are 1 minute LOS  
Tananarive. We'll pick you up for a short pass  
at Carnarvon in 9 minutes.  
CARNARVON (REV 19)

01 05 34 56 CC Apollo 7, Houston through Carnarvon. Standing  
by.

01 05 35 02 CDR Roger.

01 05 36 07 CC 7. One minute LOS; Guam in 7 minutes.

01 05 36 21 SC Roger. Coming up the pike.

01 05 36 24 CC Roger.

01 05 37 29 SC ... flight midcourse requires no corrections.

01 05 37 31 CC Real fine news.  
GUAM (REV 19)

01 05 44 27 CC Apollo 7, Houston through Guam. Standing by.

01 05 51 35 CC Apollo 7, Houston. One minute LOS Guam; Hawaii  
in 8 minutes.

01 05 51 40 CDR Roger. We're closing at about 7 or 8 feet, and  
we're just about locked up initially.

01 05 51 44 CC Real fine, Wally.

01 05 51 47 CDR ... is between 50 and 60 feet per second. At  
this point, we're just essentially a moving  
station, moving in slow.

01 05 51 56 CC Real fine.  
HAWAII through GUAYMAS (REV 19)

01 05 59 25 CC Apollo 7, Houston over Hawaii.

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01 05 59 30 LMP Go ahead. Roger. We're - I guess we're within about 150 out of ten million in random direction.

01 05 59 38 CC Roger. Understand.

01 05 59 43 LMP ...

01 05 59 52 CC We got some poor COMM this time, Walt. We will stand by a little bit until we get in a little closer.

01 06 00 02 LMP We'd like a little more information on station-keeping with the S-IVB.

01 06 00 13 CC Roger. We copy stationkeeping.

01 06 00 35 CC Apollo 7, Houston. How do you read now?

01 06 00 33 LMP Loud and clear, Jack. Go.

01 06 00 40 CC Okay. You are real fine now, Walt; we have just switched to S-band.

01 06 00 44 CMP Okay. This is Donn. Everything was pretty nominal as far as the solutions were concerned. We had a DSKY solution of 3.6 to the midcourse, and Walt had a 1.7 solution on his charts. We split the difference and did 2 feet per second aft and then slid us right in there; and except for a little bit of cross plane correction that Wally had to make at the tail end, we were nominal right up the pike. According to NOUN 40 estimates of fuel use, we used 76 feet per second. However, NOUN 40 integrates velocity

even when you are not thrusting, so I think we used somewhat less than that, probably on the order of 60 to 65 feet per second.

01 06 01 31 CC

Roger. Copy that.

01 06 01 36 CMP

Roger. On PCM high data, we had a loss of contact with the S-IVB just prior to TPI; and in the confusion here, I didn't get high bit rate data. The TPI burn - we had high bit rate data in the midcourse burn and the final RCS

thrusting on in.

01 06 01 54 CC

Okay. Copy that.

01 06 02 00 . CC

And, Walt, I have your separation PAD whenever you are ready to copy that.

01 06 02 05 / IMP

Wait one.

01 06 02 11 CC

Apollo 7, Houston. How close are you now?

01 06 02 15 CDR

Pretty close, at about - oh, at about 70 feet.

It's tumbling rather wildly, so we are starting

to stay away from it.

01 06 02 22 CC

Roger. Understand.

01 06 02 25 IMP

Ready to copy, Jack. Go.

01 06 02 26 CC

Okay. Separation PAD: 030 20 all balls NOUN  
82 NA 1618 plus 1221 00020 30847 NOUN 48 NA 0  
plus 05. Sextant star angle NA NOUN 34 NA NOUN  
43 NA 359 310 000. Remarks: It will be a posi-  
grade burn, BEF, heads down using minus X thrust-  
ers; the burn will take place in front of the  
booster.

01 06 03 29 LMP The SLA panel - the SLA panel on the opposite side of one large sphere is sticking out of the engine. It does not have a flashing light, and the other three are working fine.

01 06 03 42 CC Roger. Copy.

01 06 03 45 LMP What were the minutes on the GEII? I missed the minutes.

01 06 03 47 CC Okay. Minutes on GEII 20.

01 06 03 52 LMP Roger. Readback follows. You were a little garbled at times. Check close, SEP burn 030 20 0000 1618 plus 1221 00020 30847 005. All the way down to roll, pitch, and yaw 359 310 000. Over.

01 06 04 16 CC Roger. That's correct. Did you copy the remarks?

01 06 04 19 LMP Roger. Posigrade BEF, heads down, minus X thrusters, from in front of the booster.

01 06 04 24 CC Roger. And, Walt, on your charging of battery A -

01 06 04 29 LMP Say again.

01 06 04 30 CC On charging battery A, we'd like you not to stop charging -

01 06 04 34 LMP Say again, Jack.

01 06 04 37 CC Apollo 7. Do you read? Houston.

01 06 04 39 LMP Roger. I am reading you. How me?

01 06 04 41 CC You're five-by.

01 06 04 43 LMP What was your last question after my readback?

01 06 04 47 CC We do not want you to discontinue charging battery A at .6 amps. We'll give you a cutoff charge.

01 06 04 56 LMP Roger. I copied below that.

01 06 04 58 CC You'll continue charging. We'll give you a cutoff time.

01 06 05 02 LMP I'll be standing by for your cutoff later.

01 06 05 04 CC Roger.

01 06 12 53 CC Apollo 7, Houston.

01 06 12 55 LMP Go ahead, Houston.

01 06 12 56 CC Roger. We feel you're at the end of your tape on your DSE. If you concur, we'll take command, and we'll dump it, and you can go back to your normal switch configuration.

01 06 13 10 LMP Roger. We concur.

01 06 13 11 CC Okay. We're gonna dump.

01 06 14 31 LMP Houston.

01 06 14 39 LMP Houston, Apollo 7.

01 06 14 40 CC Go ahead, 7.

01 06 14 42 LMP That's a real nice setup on the ground. Your solution and ours were pretty close; you did a real good job.

01 06 14 49 CC You all did a real fine job, too.

01 06 14 51 LMP Very good.

01 06 14 52 CC That's what we call teamwork.

01 06 14 54 LMP Roger. That's a fact.

01 06 14 58 CC Hey, Apollo 7.

01 06 15 03 LMP Apollo 7. Go.

01 06 15 10 LMP Apollo 7, Houston. Go.

01 06 15 11 CC Stand by one.

TEXAS (REV 19)

01 06 16 13 CC Apollo 7, CAP COMM.

01 06 16 16 CC Apollo 7. Opposite omni.

01 06 16 21 CC Apollo 7, CAP COMM.

01 06 16 25 CDR Apollo 7. Go.

01 06 16 27 CC Roger. Congratulations on a great job up there.

01 06 16 30 CDR Thank you; we're ... today.

01 06 16 33 CC Yes, listen; we need a commitment on REV 45  
and sub relative to TV from here on.

01 06 16 40 CDR Roger. We'll go along with that. We were  
awfully busy up here and behind when we started  
out this morning; we had to cut you off.

01 06 16 46 CC Roger. Okay. And you are okay from 45 on.  
Is that correct?

01 06 16 50 CDR Yes, it is.

01 06 16 53 CC Okay. Fine. Thank you.

01 06 16 54 CDR Real job, but we did them all within the period,  
and the range really came up beautiful today.

01 06 16 58 CC Roger. Okay. Have fun. We will see you later.

01 06 17 03 CDR Okay. Thank you.

01 06 18 24 CC Apollo 7, Houston. You are 1 minute LOS Texas; we will pick you up at Tananarive in 34 minutes.

01 06 18 30 CDR Roger. Ready to go.

01 06 18 32 CC Roger.

01 06 18 34 CDR I know it will take awhile for you to dump that tape; give us a call if you have the first tape ready.

01 06 18 49 CC Okay, 7. It's gonna take a little while to get the tape dumped. EECOM will let us know when they're ready, and we'll tell you when you can use it again.

TANANARIVE (REV 20)

01 06 53 44 CC Apollo 7, Houston through Tananarive.

01 06 53 49 CDR Apollo 7. Roger.

01 06 53 52 CC Roger. Your voice is pretty good this time. Between your chow there, I've got a block data number 4 to give you.

01 06 54 10 CDR Ready to copy. Go.

01 06 54 17 CC Say again. You are ready to copy?

01 06 54 20 CDR Go ahead.

01 06 54 24 CC Roger. 021 dash 4 Alfa plus 260 minus 1633 032 plus 53 plus 42 4933, 022 dash 3 Bravo plus 317 plus 1388 034 plus 13 plus 54 4523, 023 dash 3 Alfa plus 295 plus 1385 035 plus 49 plus 27 4775, 024 dash 3 Bravo plus 233 plus 1356 037 plus 24 plus 28 5013, 025 dash Alfa Charlie minus 021. Wait one, skipped GET: 038 plus 14 plus 11 4342.

01 06 57 25 CC Apollo 7, Houston. On your longitude for area 25 Alfa Charlie.

01 06 57 34 CDR Area 25 Alfa Charlie, I got lat minus 021 and no longitude.

01 06 57 40 CC Roger. Longitude minus 0180. Area 026 dash Alfa Charlie plus 090 minus 0240 039 plus 49 plus 27 4159. Houston, over.

01 06 58 16 CDR Roger. Houston. 021 dash 4 Alfa plus 260 minus 1633 032 plus 53 plus 42 4933,022 dash 3 Bravo, and I didn't get plus or minus on this. 317 plus 1388 034 plus 13 plus 54 4523.

01 06 58 47 CC Roger. Your latitude is —

01 06 58 48 CDR 023 dash 3 Alfa plus 295 plus 1385 035 plus 49 plus 27 4775,024 dash 3 Bravo plus 233 plus 1356 037 plus 24 plus 28 5013,025 dash Alfa Charlie minus 021 minus 0180 038 plus 14 plus 11 4342,026 dash Alfa Charlie plus 490 minus 0240 039 plus 49 plus 27 4159. Over.

01 06 59 35 CC Roger. Your latitude on area 223 Bravo is 2 plus 317.

01 06 59 42/ CDR ... everything else correct.

01 06 59 45 CC Everything up correct.

01 06 59 57 CC Just about LOS there, Wally. You and Donn, we would like to have you do some troubleshooting on the BIOMED harness there when you get a chance, and maybe we can pick it up over Mercury.

01 07 00 08 CDR Roger. ... rendezvous.

01 07 00 12 CC Roger.

01 07 00 14 CDR ... around. If you get a readout, we'd like to hear how much RCS propellant we have left ...

01 07 00 26 CC Affirmative. Go.

01 07 00 29 CDR ... Do you have it for us?

01 07 00 54 CC Apollo 7, Houston.

MERCURY through GUAM (REV 20)

01 07 17 49 CC Apollo 7, Houston. I have a flight plan update.

01 07 17 54 LMP Roger. Wait one.

01 07 17 58 LMP Should we use the flight plan or use the log book?

01 07 18 03 CC Say again, Walt.

01 07 18 05 LMP Did you plan to use the flight plan, or do we need the log book?

01 07 18 08 CC No, it's just one line. At time 33 30, the fuel cell purge of the O<sub>2</sub> only. .

01 07 18 21 LMP Purge the O<sub>2</sub> only of the fuel cell purge, and it has to be checked at the scheduled time. Right?

01 07 18 26 CC Roger. It's at the same time, at 33 30.

01 07 18 44 CDR It's duly noted.

01 07 18 52 CDR A roundup to date due on our window status, the center hatch window now is pretty badly blurred, I would say, useful only to detect the horizon.

01 07 19 10 CC Roger. You say it's hard to detect the horizon?



01 07 19 15 CDR Negative. It is just barely usable for detecting the horizon, rather than looking through it. It would be usable for bank angles, and that's about all.

01 07 19 26 CC Roger.

01 07 19 29 CDR My left window, what I call my number 1 window -

01 07 19 33 CC Roger.

01 07 19 34 CDR - is now developing a film on the inner surface of the outer pane.

01 07 19 45 CDR Although it's not too bad at this point, I would not shoot pictures through it.

01 07 19 53 CC Roger. Copy.



01 07 19 55 CDR I'll go on around the cockpit. The number 2 window, the one we use for rendezvous, is beautiful. And interestingly enough, small hairs like a fuzz, around the perimeter of all the windows that apparently just developed as a sort of dust, it's about three-quarters of an inch to an inch long.

01 07 20 24 CC Roger. Is that on all windows or just the -

01 07 20 28 CDR That's on all windows, and I'm now over to number 4 window. It does have the same dust, and it's getting a little bit cloudy but only around the perimeter on the upper right corner, as you would think of the upper and lower with the X-axis horizontal.



01 07 20 49 CDR It looks like the number 4 window may occlude out after a few more days.

01 07 20 55 CC Roger. Looks like number 4 may occlude out after 3 or 4 more days, right?

01 07 21 00 CDR Roger. Number 5, I had to cello it now - it has a slight film on the inner surface. We'll be standing by for IFR.

01 07 21 12 CC Yes, sounds like it.

01 07 21 15 CDR Naturally, we'll keep you updated on this, and we'll discuss where we're going.

01 07 21 20 CC Roger.

01 07 21 22 CDR Affirmative. The target was visually fixed during the final stage of braking about midway between Betelgeuse and Sirius on a line drawn between the two stars.

01 07 21 44 CC Roger. Copy.

01 07 21 47 CDR And it's a very traumatic experience.

01 07 21 50 CC Sounds like it was a good one.

01 07 21 54 CDR We arranged for an update, and I think John Young was on a while ago, on our fuel remaining, just to give us an academic theory.

01 07 22 05 CC I'll check.

01 07 22 07 LMP ... to pass on or maybe get fixed for subsequent spacecraft. On panel C52, the QD that we hooked to the waste water servicing valve: that QD, after it's installed, provides interference with storage area B8 such that B8 cannot be

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opened and gotten into without taking down the QD again.

01 07 22 34 CC  
01 07 22 40 CDR

Roger.  
There's something I think we ought to make note of, Ron. The lightweight headsets are preferable to the COMM carriers due to the comfort of not having anything on your head but the plugs in our ears. We're using the plastic plugs rather than the rubber type nipples.

01 07 22 59 CC

You're using your own molded plastic plugs, right?

01 07 23 03 CDR

That's affirmative.

01 07 23 08 CC

Roger. From our calculations on the RCS fuel down here, it looks like it was pretty much nominal. We used the nominal plus a portion of the reserve, and so you're about right on. We're standing by for a further temperature stabilization to get a more accurate picture of it.

01 07 23 26 CDR

Roger.

01 07 23 28 CC

On your tape recorder, as you know, we've recorded a lot of high bit rate and not too many places to dump it. It's going to take about three revs. So you'll have no voice recording on your tape recorder for awhile. We'll let you know when it's available for use again.

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01 07 23 44 CDR Roger.

01 07 24 01 CC Wally, we'd like to get an indication of how you're feeling up there and if the Actifed did you any good.

01 07 25 22 CC Apollo 7, Houston. About 1 minute to LOS Guam.

01 07 25 26 CDR Roger. I didn't give an answer on the Actifed or aspirin. You were cut out.

01 07 25 37 CC Roger. I need to get an idea of how you feel then if the Actifed was working. Do you have any further symptoms?

01 07 25 46 CDR My mucous is much thicker, and I think I probably should continue on Actifed and use aspirin when I go to sleep at night.

HAWAII through HUNTSVILLE (REV 20)

01 07 36 10 CC Apollo 7, Houston through Hawaii.

01 07 36 16 CDR Roger. We're recording you on humidities.

01 07 36 20 CC Say again.

01 07 36 22 CDR Roger. We're - hygrometer.

01 07 36 27 CC Roger. Understand.

01 07 36 31 CMP Go ahead. We're standing by.

01 07 36 36 CC Wally, we're just a little curious if you have had any indications of a fever at all?

01 07 36 44 CDR Negative. I took my temperature. It's normal, and we've done the hand-holding bit on the forehead, and it just appears that the nasal passage is very full. I haven't been coughing. There's nothing in the lungs.

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01 07 37 04 CC Roger.

01 07 37 07 CDR I'd prefer to dry it up if I could, and I believe that the decongestant is my best bet.

01 07 37 20 CC Wally.

01 07 37 21 CDR Go.

01 07 37 22 CC We would like for you to go ahead and stay on the Actifed and continue with the aspirin then.

01 07 37 26 CDR Roger. What's the frequency of the usage?

01 07 37 33 CC Stand by.

01 07 37 36 CDR Say again.

01 07 37 44 CC The Actifed once every 8 hours.

01 07 37 48 CDR Roger.

01 07 37 57 CC Wally, aspirin can be as often as two every 4 hours if desired.

01 07 38 02 CDR Roger. Thank you for your help.

01 07 38 10 CDR I'll follow that schedule until we land, we run out, or I feel better.

01 07 38 19 CC Pretty hard to read that time, Wally.

01 07 38 21 CDR Roger. I'll follow that schedule until we land, run out, or feel better.

01 07 38 27 CC Roger. Concur.

01 07 42 26 CT Huntsville LOS.

GUAYMAS (REV. 20)

01 07 46 55 CC Apollo 7, Houston. One minute to LOS. We'll pick you up Tananarive at 32 plus 27.

01 07 47 13 SC Roger.

01 07 47 23 SC That's 32 plus 37?

01 07 47 27 CC That is affirmative.  
TANANARIVE (REV 21)

01 08 27 28 CC Apollo 7, Houston.

01 08 28 10 CC Roger.

01 08 28 20 CC Apollo 7, Houston.

01 08 28 44 CC Apollo 7, Houston.

01 08 28 50 CDR Apollo 7. Go ahead.

01 08 28 54 CC Roger. We request you terminate battery A  
charging at .4 amp.

01 08 29 02 CDR Roger. .4 amp.

01 08 29 05 CC Roger. We showed .47 amp at Guaymas. Request  
onboard readout this time.

01 08 29 13 CDR Okay. We might check on are we getting my  
telemetry down?

01 08 29 20 CC That's a negative telemetry on that, Tananarive.

01 08 29 24 CDR Roger. We sorta believe we had a wire pulled  
out that apparently pulled out, sooner to  
Tananarive addition. But we'll be getting off  
the tape dumps beyond this pass.

01 08 29 38 CC Roger. We should be able to get some on the  
Mercury at about 32 plus 50.

01 08 29 42 CDR Understand that at 32 after we're over the hill.

01 08 29 46 CC Say again, amp.

01 08 29 51 IMP ... and reading about .5 amp.

01 08 29 57 CC Roger. Copy .5.

01 08 30 07 CC Apollo 7, Houston. You might be advised that our last check on the voice quality of the DSE is still very good.

01 08 30 15 CDR ...

01 08 31 12 LMP Houston, Apollo 7.

01 08 31 13 CC Houston, Go.

01 08 31 15 LMP Roger. We started our ECS redundant component check about 5 minutes ago, and I brought up suit compressor 2. The AC was, prior to shutting suit compressor 1 off, and at that time, I had a half amp undervoltage on main bus A and main bus B and reset okay.

01 08 31 44 CC Roger. Understand. When you turned suit compressor 1 off, you also had a main bus A and B undervoltage, and it reset okay.

01 08 31 55 LMP Affirmative.

01 08 31 57 LMP Main ... power breaking.

01 08 32 06 LMP I had two on at ... once.

01 08 32 10 CC Say again, Walt.

01 08 32 13 LMP Did you copy?

01 08 32 14 CC Negative on the last statement.

01 08 32 17 LMP Had two on at once and up on the main bus A and main bus B undervoltage. I'm currently reading 27 and 1/2 volts on each main bus.

01 08 32 28 CC Roger. Understand.

01 08 32 37 LMP And where is the next place where I'll be able  
to have you verify my main reg A and B?

01 08 32 47 CC Roger. We should get that at Mercury. We  
pick them up at 32 plus 50.

01 08 32 54 LMP Roger. Thank you.  
MERCURY (REV 21)

01 08 53 00 LMP Houston, Apollo 7. How do you read?

01 08 53 03 CC Apollo 7, Houston. Loud and clear.

01 08 53 07 LMP If you have somebody standing by, we would like  
to check our main oxygen rate.

01 08 53 14 CC Roger. We're receiving the data; continue.

01 08 53 22 LMP Okay.

01 08 53 30 CC Stand by; we just lost data.

01 08 53 32 LMP Stand by till you get data back.

01 08 53 36 CC Roger. That data is back in; continue.

01 08 53 40 LMP Main reg B valve closed.

01 08 53 50 CC Okay. We're reading 10 - 10.

01 08 54 01 CC Roger. We are reading 102.

01 08 54 04 LMP Roger. Thank you. 102.

01 08 54 12 LMP Main reg B valve now is back ON. Main reg A  
valve OFF.

01 08 54 23 CC Apollo 7, Houston. Say again.

01 08 54 25 LMP Standing by for your reading on the other valve.

01 08 54 31 CC Roger. We are reading 105.

01 08 54 34 LMP Understand 105, thank you. Main reg A back ON.

01 08 54 44 CC Roger.

01 08 54 48 LMP Are you reading Wally's BIOMED now?

01 08 54 52 CC Apollo 7, Houston. Affirmative. It looks good now.

01 08 54 57 CC We'll work on Donn's when he wakes up.

01 08 55 01 LMP Exercising right now.

01 08 55 02 CMP It's a first!

01 08 55 05 CC Amazing!

01 08 55 08 CC The CDR is exercising, you say?

01 08 55 12 LMP Wally's exercising.

01 08 55 22 CMP I think you ought to pass that on to Deke.

01 08 55 26 CC I'll call him on the phone.

01 08 56 01 CC Apollo 7, Houston. Number one surgeon certainly appreciates your efforts there.

01 08 56 09 LMP Roger. The lead came apart, apparently.

01 08 56 14 CC Roger. We understand.

01 08 56 23 LMP Houston, Apollo 7. The ECS redundant component check is complete; we did not close secondary radiators.

01 08 57 07 CC Roger. Understand. Did not close secondary radiators.

01 08 57 11 LMP Also wonder if - how long we want to go with the primary boilers without trying it and possibly reservicing it?

01 08 57 21 CC Roger. Looks like right now we're going to work on that maybe on the next shift; I don't know. Or tomorrow. You have 1 minute LOS; be

advised turn up your S-band volume at 33 plus 09.

We will have a - S-band pass over Hawaii.

01 08 57 42 IMP

33 plus 09.

01 08 57 45 CDR

Hey, Ron. This is Wally.

01 08 57 46 CC

Go.

01 08 57 48 CDR

Do you have enough time to agree to bring the TV up?

01 08 57 52 CC

I'm getting an update on the time, and I'll pass it up later.

01 08 57 56 CDR

Roger.

01 08 57 57 IMP

Roger. What is the time for the next TV pass and we will turn our S-band volume up till there would be a lock-on on Hawaii.

01 08 58 06 CC

Roger.. Concur.

HAWAII through HUNTSVILLE (REV 21)

01 09 10 06 CC

Apollo 7, Houston.

01 09 10 19 CC

Apollo 7, Houston.

01 09 10 21 SC

Roger. Loud and clear. I understand.

01 09 10 23 CC

Hey, sounds beautiful.

01 09 10 25 CDR

Very good.

01 09 10 29 CDR

And now would you give us an ascending node update? A chart update?

01 09 10 34 CC

Roger. Stand by. I don't have one right now. Give you one shortly.

01 09 10 37 CDR

No rush.

01 09 10 40 CC

And be advised on the TV usage; it's about 71 plus 40.

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01 09 10 47 CDR Okay.

01 09 11 17 CC Apollo 7, Houston. There is your nodal update.

01 09 11 27 CDR Go ahead, Houston.

01 09 11 28 CC Roger. REV 21, GET is 32 plus 40 01us 09.  
Longitude 77.1 east, right ascension 0618.

01 09 11 35 CDR Roger. We have that. Thank you.

01 09 11 56 CC Roger.

01 09 14 24 CC Apollo 7, Houston.

01 09 14 44 CC Apollo 7, Houston. We will have a handover to  
Huntsville at 33 plus 16, so stand by for  
S-band volume decrease slightly before that.

01 09 15 00 CT Hawaii here, Apollo 7.

01 09 15 06 CDR Houston, Apollo 7.

01 09 15 07 CC Houston. Go.

01 09 15 14 CC Wally, did you copy that at 33 16 we will switch  
to Huntsville? And that S-band will break lock  
at that time?

01 09 15 21 CDR Houston, Apollo 7.

01 09 15 23 CC Houston, Apollo 7, Houston. Do you read?

01 09 15 45 CC Apollo 7, Houston.

01 09 15 53 CDR Houston, Apollo 7.

01 09 15 55 CC Apollo 7, Houston.

01 09 16 03 SC ...

01 09 17 02 CC Apollo 7, Houston.

01 09 17 06 CDR Roger. Ron, 7. Go.

01 09 17 08 CC Roger. We are back in VHF again. Missed your last comments on S-band.

01 09 17 14 CDR Roger. We have had LMP back on BIOMED as per flight plan.

01 09 17 22 CC Roger. We confirm.

01 09 19 30 CC Apollo 7, Houston. One minute AOS Tananarive at 34 plus 03.

01 09 20 48 CT Huntsville LOS.  
TANANARIVE (REV 22)

01 10 04 34 CC Apollo 7, Houston. Tananarive standing by.

01 10 07 38 LMP Houston, Apollo 7. Do you read? Over.

01 10 07 41 CC Apollo 7, Houston. Go.

01 10 07 44 LMP Roger. We have the instrument test meter read-outs for you if you've got time to take them.

-1 10 07 52 CC Roger. We have 1 minute to LOS.

01 10 07 56 LMP Forget it.

01 10 07 58 CC Roger. We'll check you on Mercury at 34 plus 25.  
MERCURY (REV 22)

01 10 25 57 CC Apollo 7, Houston - Mercury .

01 10 26 23 CC Apollo 7, Houston. Opposite omni.

01 10 26 30 LMP Roger.

01 10 26 34 LMP Hey, Ron, would you identify a filter for us please? ...

01 10 26 40 CC Which one?

01 10 26 42 LMP Serial number 1002, and the number on the other side, Sugar Easy Baker 33100050 dash

206. Over.

01 10 27 01 CC Roger. What was your request on this?

01 10 27 04 LMP Want you to verify if that is the 2A filter, the filter that is called out as 2A in our documentation. That is the only labeling on this filter.

01 10 27 21 CC Roger. A filter you say?

01 10 27 25 LMP A filter for the 70mm Hasselblad. Over.

01 10 27 29 CC Roger. Copy now.

01 10 27 57 CC Walt, we would like some onboard readings: your battery charger current, and the service module RCS propellant quantities.

01 10 28 10 LMP Battery current is still reading .5 amp, and I would like to know what you have on it, and I will read you the onboard quantities in the service module RCS propellant.

01 10 28 28 LMP Quad A is showing 58 percent. Quad B is still at 93 percent where we launched at. Quad C is 65 percent. Quad D is showing about 68 percent. Over.

01 10 28 56 CC Roger. We copy, and we are reading .43 on the battery charger current.

01 10 29 02 LMP Roger. I will continue charging, and I am still reading .5 down the line, and you can give me a call when they cease charging.

01 10 29 10 CC Roger. Will do.

01 10 31 23 CC Apollo 7, Houston. Do you want your temperature corrected onboard readout for the RCS?

01 10 31 32 CDR Affirmative. Please go with it.

01 10 31 34 CC Roger. Alfa five six - disregard. Bravo Charlie six one and Delta is six four.

01 10 31 48 LMP Five six six one six four. I have all the service test meter readouts. Are you interested in any of them in particular? I have them logged in the flight plan.

01 10 32 12 LMP I will give you the RCS - command module RCS temperatures anyway. That is five C and D and six A, B, C, and D, all five modes except 60 C and 64.6.

01 10 32 32 CC Roger. We copy, and we would like the battery pressure if you have it available. And, Walt, S-band volume up at 34 plus 44.

01 10 32 46 LMP .4 volts, and it seems to be in a standard position. We check it before we make a urine dump, and it goes right down to .6 volts; and soon as you close the dump, it goes right back up to 1.4.

01 10 33 02 CC Roger.

HAWAII (REV 22)

01 10 44 58 CC Apollo 7, Houston.

01 10 45 20 CC Apollo 7, Houston.

01 10 45 23 CDR Apollo 7. Loud and clear.

01 10 45 26 CC Roger. Loud and clear. You're coming down,  
down. Voice back up now.

01 10 45 30 CDR Roger.

01 10 45 36 CC Wally, we'd like to select P00 at your conven-  
ience just to update the state vector.

01 10 45 54 CDR Houston, do you read ...?

01 10 45 57 CC Apollo 7, affirmative.

01 10 46 00 CDR Roger. Do you want us to give ...

01 10 46 05 CC Say again. A little garbled that time.

01 10 46 07 SC We'd like to give you an update. We'd like to  
put the sextant calibration test when we call  
for 36 hours and 30 minutes into Donn Eisele's  
wake period.

01 10 46 30 CC Roger. Sextant calibration test. We'll see  
if we can't move that into Donn's wake period.

01 10 46 39 CDR Thank you.

01 10 47 26 CC Apollo 7, Houston. We're still looking on that  
dash 206 filter to determine which one it is.

01 10 47 34 CDR Roger. It's showing red; it's not green. We're  
hoping it's 2A.

01 10 47 41 CC Roger.

01 10 47 43 CDR Clear coil filter. It's one of those last  
little things thrown at us before we launched.

01 10 49 33 CC One minute to LOS. We're getting a lot of  
static on the ground down here. I was just  
wondering if you're getting it.

01 10 49 42 CDR Say again.

01 10 49 46 CC You are.

01 10 49 47 CDR Go ahead.

01 10 49 53 CDR Ron, would you say again?

01 10 49 55 CC Roger. We're receiving a lot of static on the ground. Are you receiving any at all?

01 10 50 00 CDR Negative.

01 10 50 04 CC Roger.

REDSTONE (REV 22)

01 11 01 31 CC Apollo 7, Houston.

01 11 02 07 CC Apollo - Apollo 7, Houston.

01 11 02 16 CDR This is Apollo 7. Do you read?

01 11 02 18 CC Roger. The dash 206 filter is the 2 Alfa filter, and it should be clear, hopefully.

01 11 02 28 CDR Say again.

01 11 02 29 CC Roger. The dash 206 filter is the 2 Alfa, 2A filter.

01 11 02 38 CDR Roger. Thank you. I have one question on potable water. We are scheduled to chlorinate at this time, and we have a completely full tank. Over.

01 11 02 53 CDR This tank has been full for some time, Ron. And it came up several months back, there is a question as to how much ullage volume you have to have in the top of that tank before you chlorinate. I'm kind of concerned about

the fact that the chlorination that we put in yesterday is probably still in that tank.

01 11 03 16 CC Roger. We understand your problem, and we'll get the word to you shortly here.

01 11 03 18 SC Okay.

01 11 03 19 F CAM COMM, will you tell them that ...

01 11 03 20 CDR We will wait till you get an answer.

01 11 03 23 CC Say again, Wally. Oh, I understand. We'll delay till we get an answer.

01 11 03 28 F CAP COMM from Flight.

01 11 03 42 CC Apollo 7, Houston. We are reading .41 on the battery charger, and you can terminate charging battery A.

01 11 03 57 CDR Understand. Stop charging, .41 amp.

01 11 04 01 CC Affirmative.

01 11 04 03 IMP I am still reading .5 on board.

01 11 05 10 IMP Houston, Apollo 7. Over.

01 11 05 12 CC Houston. Go.

01 11 05 17 CC Go ahead, Walt.

01 11 05 20 IMP Roger. I show that we've probably been charging battery A now for about 7 hours. Is that consistent with putting the energy back that we took out during boost and both SPS burns?

Over.

01 11 05 42 CC Walt, took out 9.3, and looks like we put in about 4.5 hours.

MERCURY (REV 23)

01 12 02 13 CC Apollo 7, Houston.

01 12 02 16 CDR Roger. Go ahead, Houston.

01 12 02 17 CC Roger. We'd like to send a P27 update request accept, and I have a NAV check to give you.

01 12 02 41 CDR Ready for NAV check.

01 12 02 45 CC NAV check 036 15 4 balls plus 1875 plus 16885 1271. Read back.

01 12 03 11 CDR Roger. Understand. 615 4 balls plus 1875 16885 1271. Over.

01 02 03 27 CC Roger. I didn't get your readback on the hours. 036 hours 15 minutes.

01 12 03 38 CDR Roger. It's just the three.

01 12 03 54 CC Apollo 7, Houston. I've got some update for you on the RCS calculated quantities and your profile from battery status if you want to copy.

01 12 04 11 CDR Roger. Did you read our readback on the NAV check okay? Go with your info on the RCS quantity and that update.

01 12 04 27 CC Roger. This will be an update on figure 3 dash 1 on your RCS profile. At 36 hours, you have 820 pounds.

01 12 04 52 CDR Roger. Thirty-six hours, 820 pounds.

01 12 04 55 CC And your RCS ground calculated quantities are, in order, 56 percent, 63 percent, 47 percent, 63 percent.

01 12 05 17 CDR Roger. I read 56, 63, 47, 63, and the total quantity again 8 ...

01 12 05 35 CC Roger. Your total quantity is 820 pounds.  
GUAM (REV 23)

01 12 06 54 CC Apollo 7, Houston.

01 12 07 12 CC Apollo 7, Houston.

01 12 07 36 CC Apollo 7, Houston.

01 12 08 25 CC Apollo 7, Houston.

01 12 08 48 CC Apollo 7, Houston.

01 12 09 30 CC Apollo 7, Houston.

01 12 09 53 CDR You read. Hey, Guam, do you read?

01 12 10 16 CC Apollo 7, Houston.

01 12 10 19 CDR Apollo 7, go ahead.

01 12 10 22 CC Roger. Reading you weak. The computer is yours.

01 12 10 27 CDR Thank you. ...

01 12 10 33 CC Say again, Walt.

01 12 10 35 IMP Roger. At 36 hours into the flight, what number do I go on my chart?

01 12 10 40 CC Roger. You are going in 820 pounds, 820 pounds.

01 12 10 47 CDR Eight hundred and twenty pounds, and I copied 634767 ...

01 12 10 53 CC All right. Roger. Say it again? 56634763?

01 12 11 00 CDR Roger. Thank you.

01 12 11 05 CC And your battery status?

01 12 11 10 CDR Say again.

01 12 11 11 CC Your battery status in ampere hours.

01 12 11 15 CDR Roger.

01 12 11 16 CC Batt A 35.2, B 30.4, C 39.5.  
REDSTONE (REV 23)

01 12 37 02 CC Apollo 7, Houston.

01 12 37 05 CDR Go ahead.

01 12 37 06 CC Roger. Did you copy battery status last pass?

01 12 37 11 LMP Stand by. Roger. I had 35.6, 30.4 I think it was, and 39 something, Ron. It looks to me like we didn't fill up battery A again, and is anybody giving consideration to do a second re-charge of that battery some other time in the flight?

01 12 37 33 CC Well, that is a possibility. We wanted to cut it off at the .4 limit though - just to - so we wouldn't get into overcharge type of problem we were talking about before launch. And we are working on it now, and we can't really come up with an answer at the present time. We'll work on it and let you know. And Walt, I have a Lima Sierra update for you.

01 12 39 14 CC Apollo 7, Houston.

01 12 39 21 CDR Go ahead, Houston.

01 12 39 22 CC Roger. I have a Lima Sierra update.

01 12 39 31 CDR ... very weak.

-01 12 39 33 CC Roger. Lima Sierra update.

01 12 39 36 CDR Stand by.  
01 12 39 44 CDR Go ahead.  
01 12 39 45 CC Roger. Lima Sierra 074 slash 051.  
01 12 39 55 CDR Roger. 074 slash 051.  
01 12 40 16 CC 7, Houston. One minute until LOS. Be advised  
Air Force 26, Navy 20.  
  
01 12 40 28 CDR Roger.  
01 12 40 32 CC Sorry about that.  
01 12 40 35 CDR Welcome to the club.  
  
ASCENSION (REV 24)  
  
01 12 59 11 CC Apollo 7, Houston.  
01 12 59 50 CC Apollo 7, Houston.  
01 13 00 47 CC Apollo 7, Houston.  
01 13 00 53 IMP Go ahead.  
01 13 00 55 CC Roger. On the water chlorination: about  
8 ounces of water, then chlorinate.  
  
01 13 01 05 IMP We got you clear for that one.  
01 13 01 08 CC Roger. I have a flight plan update. Ready to  
copy?  
  
01 13 01 40 SC ... Go.  
01 13 01 44 CC Roger. Flight plan update 38 plus 40: delete  
MCC update, 39 plus 40: do option 3 vice op-  
tion 2. Forty plus 10: cancel rendezvous  
NAV at 8 - - 80 nautical miles. Forty-one plus  
00: waste water dump. Forty-two plus 35: sex-  
tant calibration previously scheduled at 39 plus  
35. Over.

01 13 03 15 SC Rger. Over.

01 13 04 12 CC Apollo 7, Houston. S-band volume up at 37 plus 36.

01 13 04 20 CDR Roger.

01 13 05 24 CC Apollo 7, CAP COMM.

01 13 05 29 CDR Go ahead.

01 13 05 31 CC Hey, Wally, Deke here. We're not being recorded for a change. Just wanted to know how you felt about shuffling this sleep cycle around a little bit. Kind of looks to me at least - and speak up if you don't like the sound of it - but we have got a hell of a lot lost motion here when you might better be getting a little rest.

01 13 05 52 CDR We are getting kind of pooped, and I think that is why we started off the way we did today. ... needed the sleep more than we did.

01 13 06 08 CC You are very garbled. We're unable to read you.

01 13 06 13 CDR Roger. Donn is sleeping now, and he needed the sleep more than we did.

01 13 06 27 CC Roger. Understand that. I guess the question I am asking is whether you have got any allergy at all that all three to you knocking it off for a while.

01 13 06 40 CDR Let's stick another day with it and ...

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01 13 06 47 CC Okay. We only have about 30 seconds left in this pass. Why don't you think about it, and Tom or Ron will talk to you about it again over Guaymas.

01 13 06 56 CDR Roger.

MERCURY (REV 24)

01 13 35 23 CC Hello, Apollo 7. This is Houston.

01 13 35 39 CC Apollo 7, Houston.

01 13 35 43 CDR What do you say there, Tom?

01 13 35 45 CC Roger. Wally, real good rendezvous you pulled off today.

01 13 35 49 CDR Yes, that's a little more traumatic than that other bird we used to fly.

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01 13 35 53 CC Understand. We were talking down here, and we'd like to discuss free flight ... period of time about looking ahead in the flight plan, about the possibility of you all going all three crewmen on the sleep cycle. I just want to discuss it for down the line, what Deke was trying to say. What do you think about it?

01 13 36 19 CDR I don't think I'd be afraid to do it on another flight, but we're kind of reluctant right now.

01 13 36 25 CC Okay.

01 13 36 28 CDR The machine is working real well, Tom.

01 13 36 32 CC I was looking at all the block data about

○

40 hours and also waste water dump at 41, and

it's kind of quiet time after that for another 4 or 5 hours.

01 13 36 48 CDR Very good. This IVA is no problem at all. In fact, it is an asset.

01 13 36 55 CC Okay.

01 13 36 57 CDR All the problems we worried about the spacecraft picking up motions from the crew, no such thing. We can knock around the capsule like mad. You get to be quite a gymnast.

01 13 37 11 CC I want to ask you a question. How are the sleep bags working out?

01 13 37 15 CDR Not so hot.

01 13 37 17 CC Okay.

01 13 37 18 CDR You miss the 1 g lying down. With the seat belts resisting, you are held down, and you feel better controlled and better contained, I guess. Sleeping bag, you try to find a place to stick your head or your arm to hold on.

01 13 37 38 CC Our analysis is the couch is probably a little better than the sleep bag.

01 13 37 43 CDR That is correct.

01 13 37 44 CC Okay.

01 13 37 47 LMP We find the lightweight headsets are preferable to CMM carriers, too.

01 13 37 51 CC Right. Reviewed the flight plan here. Understand when you went to the lightweight headsets -

01 13 37 57 CDR Yes. The cables for the COMM carrier is very objectionable and jabs you in the neck and the shoulder and keeps pulling your head around.

01 13 38 07 CC All right.

01 13 38 11 CDR We are not at all hungry by the way. We are trying to get some exercise to keep ourselves going. That Exer-Genie's a heck of a good deal.

01 13 38 22 CC Works out real good in zero g?

01 13 38 26 CDR Hate to admit that, but it is probably one of the best spacy things we have had in years.

01 13 38 31 CC Okay. Okay. On the sleep thing, Wally, it is strictly your option, obviously. We just got to thinking maybe it will work out better, give you a little more, longer sessions of it.

01 13 39 18 CDR Houston, Apollo 7.

01 13 39 20 CC Go ahead.

01 13 39 23 CDR We don't think we ought to SYNC Hasselblad here; we may be able to take one a little later.

01 13 39 30 CC Roger. Understand about the camera.

01 13 39 35 LMP Hey, Tom. I would like to log some photographs here on magazine Q, starting the same ... the same ... We started shooting about over the Red Sea, and we are continuing up to frame 12 right now.

01 13 39 50 CC Okay. We were recording, and we have it, Walt. Thank you.

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01 13 39 54 LMP When are we going to get our tape recorders back? I see it is in motion now. Will we ever finish dumping all the tapes on the rendezvous run?

01 13 40 03 CC Not yet, Walt. We are still dumping.

01 13 40 07 LMP Okay. We would like to get a GO as soon as we get that through.

01 13 40 11 CC Roger. We will let you know as soon as it is finished.

GUAM (REV 24)

01 13 43 36 LMP Houston, Apollo 7. Over.

01 13 43 39 CC Go ahead, 7, Houston.

01 13 43 45 CDR Houston, Apollo 7.

01 13 43 48 CC Apollo 7, Houston. We go.

01 13 43 52 LMP Houston, Apollo 7. Over.

01 13 44 08 CC Roger.

01 13 44 25 CC Apollo 7, this is Houston. Go ahead.

01 13 44 30 SC Roger. Tom, do you know if they ever got the voice dump right after ... the east end we put our comments on about the tape, and I'm not sure if they dumped ...

01 13 44 45 CC Apollo 7. We'll check on it.

01 13 44 51 LMP Thanks, Tom.

01 13 46 08 CC Apollo 7, Houston. Will you give us opposite omni?

01 13 46 25 CC Apollo 7, Houston. Will you give us opposite

omni?

01 13 46 35 IMP I heard the boys in the back room talking. You got it now.

01 13 46 41 CC Roger. Apollo 7, Houston. It's taking quite a while to get all the voice data played back, Walt, and we won't really know for quite a while. Is there any particular GET on the voice you want us to check?

01 13 47 01 IMP Roger. I know we revound the tape at the Canaries, I think it was. I'm hoping we - right after boost, sometime there about 20 minutes, I think, we put out description of ... by the tape and someplace the first hour ...

01 13 48 20 CC Apollo 7, Houston.

01 13 48 23 IMP Go ahead.

01 13 48 24 CC Roger. First made ... turns out from lift-off until Canaries, and because of revind and everything, we do not have that on voice.

01 13 48 38 IMP Okay. When we get the tape back, we'll probably try to put some on it.

01 13 48 41 CC Okay.

01 13 48 48 CC Apollo 7, Houston. We are about - we're close to LOS, and you gonna have the tape back. We've just about finished all the rendezvous dump.

01 13 48 58 IMP Roger. Thank you. We've just finished chlorinating the water again.

01 13 49 02 CC Roger.  
 REDSTONE (REV 24)

01 14 08 03 CC Apollo 7, this is Houston. We have acquisition  
 at Redstone.

01 14 09 26 CC Apollo 7, Houston. Opposite omni, please.

01 14 10 32 CC Apollo 7, Houston. Would you give us the  
 opposite omni now?

01 14 10 40 IMP Roger. That's back where we started. Is that  
 where you want?

01 14 10 45 CC Yes. You switched about the same time we said  
 to switch, so - -

01 14 15 32 CC Apollo 7, Houston. Have 1 minute to LOS at  
 Redstone.

01 14 15 37 SC Roger.  
 ASCENSION (REV 25)

01 14 34 28 CC Apollo 7, Houston through Ascension.

01 14 34 33 CDR ... standing by.

01 14 34 46 CC Roger. Read you about four-by, Wally.

01 14 34 56 CDR ...

01 14 35 01 CC Apollo 7, Houston. You are coming garbled.  
 Say again.

01 14 35 33 CC Apollo 7, Houston. Say again, please.

01 14 36 02 CC Roger. Out.

01 14 36 19 CC Apollo 7, Houston.

01 14 36 22 CDR Go ahead.

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01 14 36 23      CC      Roger. Now reading you loud and clear, Wally. You happen to be in an attitude, and you have the camera available. There is a good area that we haven't had many pictures in. It's at 38 56 30, the upper end of the Persian Gulf down and to the right. If you have some time and camera, is fine; if not, no problem.

01 14 36 51      CDR      Roger. Say again the target.

01 14 36 54      CC      Roger. The upper end of the Persian Gulf. It will occur in 38 56 30.

01 14 37 03      CDR      ...

01 14 37 07      CC      Okay.

○

01 14 37 34      CDR      Houston, Apollo 7. Do you read?

01 14 37 36      CC      Go ahead.

01 14 37 38      CDR      Roger ... night air glow 240 degrees ... all - almost all over the horizon as we sweep low. ...

01 14 37 52      CC      Okay. You say all around the horizon, Wally?

01 14 37 56      CDR      That's right, on the night sky.

01 14 37 58      CC      Roger.

01 14 38 01      CDR      ... Sirius came up ...

01 14 38 06      CC      Okay.

01 14 40 18      CC      Hello, Apollo 7, Houston. Just looking at the DSKY. Are you pitched down about 90 degrees?

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01 14 40 25      CDR      That is affirm. Camera all ready.

01 14 40 28 CC Roger. Well, we have about 1 minute until LOS with Ascension, Wally, and we will catch you next time over the Pacific.

01 14 40 36 CDR Okay.  
MERCURY (REV 25)

01 15 11 33 CC Apollo 7, Houston.

01 15 12 11 SC This is Apollo 7. How do you read?

01 15 12 21 CC Apollo 7, Houston.

01 15 12 25 CDR Apollo 7. How do you read?

01 15 12 30 CC I am reading you about three-by-three. I had a block data, but I will give it to you over Guam in a few minutes - about 5 minutes.

01 15 12 41 CDR That is a block data over Guam.  
GUAM (REV 25)

01 15 16 44 CDR Video strength in clear.

01 15 16 49 CC Apollo 7, Houston.

01 15 17 08 CC Apollo 7, Houston.

01 15 17 34 CC Apollo 7, Houston.

01 15 18 12 CC Apollo 7, Houston.

01 15 18 36 CC Apollo 7, Houston.

01 15 19 38 CC Apollo 7, Houston.

01 15 19 42 CDR Roger. Houston, Apollo 7. Go.

01 15 19 45 CC Roger. I have block data. Are you ready to copy?

01 15 19 49 CDR Stand by one.

01 15 20 42 CDR Houston, go ahead ... could you call and stand

by.

01 15 20 48 CC Are you ready?

01 15 20 53 CDR Okay. Go ahead. I got it now.

01 15 20 55 CC Roger. 027 dash 2 Bravo plus 206 minus 0254  
041 26 13 4104, 028 dash 2 Bravo plus 277 minus  
0288 043 02 05 4193, 029 dash 1 Bravo plus 240  
minus 0633 044 27 52 4128, 030 dash 1 Alfa plus  
297 minus 0662 046 03 34 4246, 031 dash 1 Bravo  
plus 317 minus 0662 047 39 29 4430 032 dash  
1 Alfa plus 291 minus 0662 049 15 09 4650.  
Coming up on LOS.

01 15 23 15 LMP Roger. Understand. I read back later then.

01 15 23 19 CC Roger. Thank you.  
REDSTONE (REV 25)

01 15 42 35 CC Apollo 7, Houston.

01 15 42 42 CMP Roger, Houston.

01 15 42 45 CC Roger. Apollo 7, Houston. Ready for your  
readback on block data when you are ready.

01 15 42 50 CMP Roger. Stand by. I am right in the middle of  
a P52. Will be with you in a second.

01 15 42 53 CC Roger.

01 15 45 02 CMP Sorry, Houston. I am ready with the readback.

01 15 45 05 CC Roger. Go.

01 15 45 10 CMP Roger. Area 0272 Bravo plus 06 minus 0254 041 2613  
4104, 28 dash 2 Bravo plus 277 minus 0288 043 02  
05 4193, 029 dash 1 Bravo plus 240 minus 0633

044 2752 4128, 30 dash 1 Alfa plus 297 minus  
0662 046 0334 4246, 031 dash 1 Bravo plus 317  
minus 0662 047 3929 4430, 32 dash 1 Alfa plus  
291 minus 0662 049 1509 4650.

01 15 46 29 CC Roger. Copy readback. Check one item on the  
third block: 029 dash 1 Bravo; second entry,  
plus 240.

01 15 46 43 CMP Roger. Plus 240.

01 15 46 45 CC Roger. Readback is correct. And also 2A  
advisory: we had good voice quality on the  
Redstone dump that we got on the last pass.

01 15 46 56 CMP All very good. I got a couple of small items  
for you. Wally took a couple of aspirin and  
an Actifed, and he only took one Actifed. Walt  
took one Actifed only. He feels fine. He has  
just got a little stuffy head cold, and I put  
some nose grease in mine because my nostrils  
are a little dry - because it smells good.

01 15 47 17 CC Roger. Understand. Wally took two aspirins  
and one Actifed, and Donn took one Actifed, and  
you took some nosedrops was it or cream?

01 15 47 29 CMP Nose cream. It is a fluid they gave us in two  
tubes. Walt is the one that took the Actifed,  
not Donn.

01 15 47 35 CC Oh, okay, Donn. Sorry.

01 15 47 37 CMP Yes. Log us about 16 clicks of water here in  
the last 45 minutes or so.

01 15 47 56 CC Okay. And that is Donn.

01 15 47 58 CMP Right.

01 15 47 59 CC Okay.

01 15 48 04 CMP You can tell them I had two good solid 7 hours  
of very good sleep and feeling great.

01 15 48 10 CC Roger. Thank you.

01 15 48 52 CC Apollo 7, Houston. We would like the BIOMED to  
number 1.

01 15 49 04 CMP Understand. And I will do that after I - after  
I do this alignment. Does that mean you want  
to ... test counts?

01 15 49 12 CC Roger. We lost the downlink on the BIOMED, and  
this is just to see if it's actually the circuit  
or in the BIOMED harness.

01 15 49 26 SC Roger. I will do that in a couple of minutes.

01 15 49 31 CC Okay. Fine. We have about one and a half  
minutes to LOS.

01 15 49 38 SC You mean I get until next pass to secure this  
alignment.

01 15 49 41 CC Okay.

CANARY (REV 26)

01 16 14 24 CC Apollo 7, Houston. Acquisition Canary.

01 16 14 29 SC Roger, Houston.

01 16 15 09 CC Okay.

01 16 17 37 CC Apollo 7, Houston. About 2 minutes LOS Canary.

Next acquisition will be Redstone at 41 plus 17.

That will be about 1 hour.

01 16 18 19	CC	Apollo 7, this is Houston.
01 16 18 25	CMP	Go ahead, Tom.
01 16 18 26	CC	Roger. Donn, did you get P52 finished?
01 16 18 32	CMP	Yes. I did it two or three times.
01 16 18 35	CC	Roger.
01 16 18 36	CMP	Turned out fine.
01 16 18 38	CC	Good show.
01 16 19 14	CC	Apollo 7, Houston. We have about 30 seconds to LOS.
01 16 19 20	CMP	Okay. LOS. ... take about one half hour ...
01 16 19 29	CC	Okay.
		REDSTONE (REV 26)
01 17 17 41	CC	Apollo 7, Houston through the Redstone. Over.
01 17 17 45	CMP	Roger, Houston. Go ahead.
01 17 17 48	CC	Roger. Donn, reading you about three-by. I want to check a couple of items. Have they performed the waste water dump that was scheduled for around 41 hours?
01 17 17 57	CMP	Negative, Tom. We're going to wait until it gets to about 90 percent. That way we won't have to do it so often.
01 17 18 04	CC	Okay. Spec-1, we're going to give you the MC - we're going to send you an MCC update previously scheduled for 44 40 at 44 hours.

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01 17 18 21      CMP      Roger. Understand.

01 17 18 28      CC      And we're planning the S-IVB tracking previously  
scheduled at 46 10. It will now be at 44 36.  
You should have a good update vectored on that,  
and the S-IVB will be at about 170 nautical  
miles.

01 17 18 52      CMP      Okay. Tom, how ... as soon as I get them, I'm  
going to write them down, and then you can give  
it to me a little later.

01 17 19 03      CC      Roger.

01 17 24 43      CMP      Tom, are you still there?

01 17 24 52      CMP      Houston, Apollo 7.

01 17 24 53      CC      Go. Apollo 7, Houston.

01 17 24 56      CMP      Roger. We've just completed the 23 sextant cal-  
ibrations. I think that your data ... is down-  
range.

01 17 25 08      CC      Apollo 7, Houston. We're about 1 minute to LOS,  
and you're starting to fade out. I understand  
you've completed the sextant calibration.

01 17 25 16      CMP      Roger.

01 17 25 17      CC      Apollo 7, Houston. Did you experience a restart  
a couple of minutes ago?

01 17 25 23      CMP      I experienced a restart during part of program  
52 that I was using to find some stars I needed,  
and I think it happened - it happened once be-  
fore, the other day - when you go from zero

optics to CMC and also hit the feed and you haven't waited 15 seconds. It's a procedural error, and it's just a momentary restart, almost program alarm.

01 17 25 47 CC Okay.

01 17 25 51 CMP Incidentally, I have an O<sub>2</sub> FLOW HI light. I suspect it's the same problem we had earlier - sensor failure. I haven't had time to troubleshoot it for sure yet, though.

01 17 26 01 CC Okay. We'll pick you up - about 15 seconds to LOS, and we'll pick you up over the Canaries.

ANTIGUA (REV 27)

01 17 38 47 CC Apollo 7, Houston.

01 17 39 38 CC Apollo 7, Houston.

01 17 39 41 LMP Houston, Apollo 7. Go.

01 17 39 44 CC Roger. In reference to the water dump: we're reading 70 percent now, predicting a 90-percent level at approximately 45 hours but no later than 46 hours. We'll have to dump at that time. It's right in the middle of a sleep period. Suggest dumping as soon as you can in order to prevent interrupting them in the middle of their sleep cycle.

01 17 40 17 LMP Roger. I got you, Bill. They're already asleep, and the way we've got it rigged, it won't disturb either one of them. So I'd just as soon

wait till 45 hours.

01 17 40 29 CC

Okay.

01 17 40 32 IMP

Good thinking. Bill, could you give me those flight plan updates that Tom called awhile ago? I was right in the middle of a G&N exercise and didn't get to write it down.

01 17 40 42 CC

Okay. I'll start talking. I have about a minute and 15 seconds. Okay. At 44 hours, we will give you the MCC update previously scheduled for 44 plus 40.

01 17 41 03 IMF

Roger.

01 17 41 06 CC

Okay. At 44 plus 36, perform S-IVB tracking. That was previously scheduled at 46 plus 10. At that time - this new time - the S-IVB will be at 169 nautical miles. The last item, at 45 plus 30, delete P52 IMU realign.

CANARY (REV 27)

01 17 46 54 CC

Apollo 7, Houston.

01 17 47 12 CC

Apollo 7, Houston.

01 17 47 18 CMP

Roger, Houston. Go ahead.

01 17 47 20 CC

Roger. How far did you copy on the flight plan update.

01 17 47 27 CMP

Stand by ...

01 17 47 47 CMP

I think I got it all, Bill. I've got the S-IVB tracking at 44 36 instead of 46 hours and delete the P52 realignment at 45 30.

01 17 48 03 CC Roger. That completes the flight plan update. I have a couple of items. We're still monitoring an O<sub>2</sub> FLOW HI, check waste dump closed. Second item: we'd like BIOMED CMP. Okay. We're monitoring it now. Forget the BIOMED; it's okay.

01 17 48 31 CMP Okay. Are you getting anything on me?

01 17 48 33 CC Yes, we are.

01 17 48 35 CMP Okay. You're only getting half of it. One of those little plugs, I can't make up. I'll try again later to get it to plug in.

01 17 48 44 CC Okay.

01 17 48 48 CMP I did have the waste vent open now, but I don't think that interferes with the O<sub>2</sub> FLOW HI.

01 17 48 55 CC Roger. Understand. It was open.

01 17 48 57 CMP Roger. It was open for a little while there. It was stowage compartment. However, I've still got the O<sub>2</sub> FLOW HI, and I just turned the vent off.

01 17 49 08 CC Roger.

01 17 49 13 CMP Cabin pressure looks normal. I suspect it's still a sensor problem.

01 17 49 19 CC Okay. We're watching it. We have about 6 more minutes here.

01 17 49 28 CMP Okay. Any help you can give me on that, I'd appreciate it.

01 17 49 31 CC Roger. We'll keep you informed.

01 17 53 03 CC Apollo 7, Houston. We have about 2 minutes to Los Canaries. Your O<sub>2</sub> manifold is dropping off. It's dropped from .96 to .74 in the last few minutes - O<sub>2</sub> flow.

01 17 53 23 CMP Okay. O<sub>2</sub> flow.

01 17 53 25 CC Right.

01 17 53 26 CMP Roger. I'm seeing the same thing. My onboard procedure leads me to believe it's still a failing sensor. Do you confirm that?

01 17 53 55 CMP Bill, what do you have down there for O<sub>2</sub> tank pressure? Mine is reading low - about 840.

01 17 54 01 CC Okay. Stand by.

01 17 54 09 CMP Correction. Number 2 is reading low. Number 1 is about 860.

01 17 54 25 CC Coming up on LOS, you have 876 and 853 in one and two, and 846 in the surge tank.

01 17 54 36 CMP Okay. Is that all right with everybody down there?

01 17 54 39 CC I think so. Stand by.

01 17 54 41 CMP I guess you would tell me if it was not.

01 17 54 43 CC Roger. That's good.

01 17 54 45 CMP ... everybody ...

01 17 54 52 CC We'll need the S-band volume up for our Honey-suckle pass at 42 plus 32.

01 17 55 00 CMP Roger. I'll change it.

01 17 55 02 CC Thank you.

## HONEYSUCKLE (REV 27)

01 18 33 06 CC Apollo 7, Houston.  
01 18 33 22 CC Apollo 7, Houston.  
01 18 33 46 CC Apollo 7, Houston.  
01 18 34 08 CC Apollo 7, Houston.  
01 18 34 30 CC Apollo 7, Houston.  
01 18 35 06 CC Apollo 7, Houston.  
01 18 35 30 CC Apollo 7, Houston.  
01 18 35 58 CC Apollo 7, Houston.  
01 18 36 41 CC Apollo 7, Houston.  
01 18 37 24 CC Apollo 7, Houston.  
01 18 38 01 CC Apollo 7, Houston.

## REDSTONE (REV 27)

01 18 52 03 CC Apollo 7, Houston.  
01 18 52 10 CMP Houston, Apollo 7. Go.  
01 18 52 13 CC Roger. Reference the O<sub>2</sub> FLOW HI. Analysis here indicates your O<sub>2</sub> flow high. Indication on board was valid; at the time, you had 5.0 cabin pressure when the waste vent was open. Upon closing, the pressure gradually increased to 5.1.  
01 18 52 54 CC Apollo 7, Houston. Do you still have an O<sub>2</sub> FLOW HI?  
01 18 52 58 CMP Negative. Down to normal now.  
01 18 53 01 CC Okay. One other item, the waste water dump.

Recommend dumping 85 percent instead of 90 percent. They're not sure it's safe to wait till 90 percent due to possibility of overboard drain freeze.

01 18 35 48 CC Apollo 7, Houston. Is the commander's and the IMP's cobra cable unconnected? Verify that it is not connected.

01 18 54 02 CMP Roger. They're not connected up here. They're off of it.

01 18 54 05 CC Thank you very much. Also I have a - disregard.

01 18 54 12 CMP Say again.

01 18 54 13 CC Disregard.

01 18 55 27 CMP Hey, Bill, would you log me 12 clicks from the water gun?

01 18 55 32 CC Roger, 12 clicks from the water gun.

01 18 59 50 CC Apollo 7, Houston. One minute LOS Redstone; Antigua at 43 plus 10.

01 18 59 59 CMP Roger. 43 plus 10. You got the night shift, eh?

01 19 00 55 CC Apollo 7, Houston. Coming up on LOS. I will have a flight plan update. Just a couple of items at Anitgua.

ANTIGUA (REV 28)

01 19 11 14 CC Apollo 7, Houston.

01 19 11 17 CMP Apollo 7. Go ahead.

01 19 11 20 CC Roger. I have a couple of things for flight plan update.

01 19 11 26 CMP Okay. Go ahead.

01 19 11 28 CC Roger. Fuel cell O<sub>2</sub> purge at 45 plus 30. That's over Carnarvon.

01 19 11 50 CMP Roger. Fuel cell O<sub>2</sub> purge at 45 plus 30.

01 19 11 56 CC Roger. And just as a matter of information, have you checked any of the G&N control modes?

01 19 12 07 CMP Roger. We've used - maneuvered manually and DAP half degree per second and our deadband; we've done auto maneuvers, auto trip maneuvers, and same deadband; and I also used the minimum impulse controller in the LEB.

01 19 12 27 CC Roger. Five degrees per second, minimum deadband, auto trim, minimum deadband, and a minimum impulse controller in the LEB.

01 19 12 37 CMP Roger.

01 19 12 38 CC Thank you.

01 19 16 33 CMP Houston, Apollo 7.

01 19 16 34 CC Apollo 7, Houston. Go.

01 19 16 44 CC Apollo 7, Houston. Go.

01 19 16 45 CMP Houston, Apollo 7.

01 19 16 48 CC Roger. Apollo 7, Houston.

01 19 16 50 CMP There is a high pitched interference noise coming over VHF. Have you got any idea what it is? Are you picking it up down there?

01 19 18 01 CC High pitched interference on VHF negative.  
Stand by.

01 19 18 08 CC Donn, this is about the same place last night  
where you picked up the music.

01 19 18 14 CMP There's some music along here, too.

01 19 18 31 CC Apollo 7, Houston. The NET is looking at it.  
CANARY (REV 28)

01 19 24 04 CMP Houston, Apollo 7.

01 19 24 08 CC Apollo 7, Houston. Go.

01 19 24 11 CMP Roger. I've got a hydrogen purge scheduled  
here at 44 hours. Do you want me to do that,  
or are we doing that just on demand, so to  
speak?

01 19 24 21 CC Negative. That one has been deleted.

01 19 24 24 CMP That's what I thought.

01 19 24 26 CC That's the hydrogen purge - fuel cell purge -  
at 44 hours. That has been deleted.

01 19 24 32 CMP Roger.

01 19 25 11 CC Apollo 7, Houston. We will be giving you a  
CSM and S-IVB state vector update over Carnarvon.  
We will require ACCEPT when you get to Carnarvon,  
and we're estimating AOS Carnarvon at 43 plus 57.

01 19 25 35 CMP Apollo 7. Understand.

01 19 28 43 CC Apollo 7, Houston. One minute til LOS at  
Canary. If you need contact, we have about  
2 minutes S-band after that at Madrid.

01 19 28 56      CMP      ... Apollo 7. Understand. Thank you.  
CARNARVON (REV 28)

01 19 57 55      CC      Apollo 7, Houston.

01 19 58 20      CC      Apollo 7, Houston.

01 19 58 49      CC      Apollo 7, Houston.

01 19 59 14      CC      Apollo 7, Houston.

01 19 59 34      CC      Apollo 7, Houston.

01 19 59 51      CC      Apollo 7, Houston.

01 20 00 10      SC      Houston, Apollo 7.

01 20 00 11      CC      Roger. Apollo 7, Houston. How do you read?

01 20 00 14      CMP      Loud and clear.

01 20 00 16      CC      Roger. If you'll go to ACCEPT, we'll send up  
your state vectors.

01 20 00 20      CMP      Going to ACCEPT.

01 20 00 27      CC      And I have a NAV check when you are ready to  
copy.

01 20 00 32      CMP      Roger.

01 20 00 34      CC      NAV check reads: 044 03 0000 minus 2170 plus  
12234 1513.

01 20 01 09      SC      Roger. Could you send that one again?

01 20 01 12      CC      Roger. NAV check: 044 03 0000 minus 2170  
plus 12234 1513. Read back.

01 20 01 40      CMP      Roger. 44 3 0000 minus 2170 plus 12234 1513.

01 20 01 52      CC      Roger. Readback correct.

01 20 03 40      CC      Okay. Apollo 7, Houston. The computer is yours.  
We have a little less than 2 minutes LCS

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Carnarvon. Request S-band volume up in about 1 minute or 2 minutes.

01 20 01 54 CDR

Roger.

REDSTONE (REV 28)

01 20 28 57 CC

Apollo 7, Houston through the Redstone. Standing by.

01 20 32 00 CC

Apollo 7, Houston. One minute LOS Redstone. Pick you up at the Bahamas in about 12 minutes.

01 20 32 10 CMP

Roger. Jack, I read you a bit faint.

01 20 32 14 CC

You're five-by, Donn.

MILA through BERMUDA (REV 29)

01 20 43 26 CC

Apollo 7, Houston. Standing by.

01 20 43 30 CMP

Roger. Jack, I'm doing the P20 navigation right now.

01 20 43 34 CC

Roger.

01 20 43 35 CMP

... section.

01 20 51 52 CMP

Houston, this is Apollo 7.

01 20 51 54 CC

Go ahead, 7.

01 20 51 56 CMP

Roger. The target's still visible in the sextant here. It's not as good as it was earlier. It's a different set angle because of the bright earth background. I see through the base line of sight, but it's still there, and you can still track it one more time.

ca

01 20 52 16 CC Roger. I've been following your marks, Donn,  
and it looks like you are getting in VERBAL 649;  
it looks like you're getting real good marks.

01 20 52 40 CMP Yes. We update this thing on the order of  
optics tracking rate within, I guess, a couple  
of minutes at the last of the ...

01 20 52 54 CC Roger.

01 20 53 43 CMP Target's not in sight here; it was earlier,  
but it's --

01 20 53 47 CC Say again, Donn.

CANARY (REV 29)

01 20 57 15 CC Apollo 7, Houston through Canaries. Standing  
by.

01 20 57 24 CMP Houston.

01 20 57 28 CC Roger. Go ahead, Donn.

01 20 57 35 CMP ...

01 20 57 47 CC I couldn't read that, Donn. You brought two-by.

01 20 57 53 CMP I think the spacecraft ...

01 20 58 05 CC Donn, we can't quite make that out. We've got  
you here for about another 5 minutes, and  
maybe signal strength will get a little bit  
better.

01 21 00 12 CC Apollo 7, Houston. How do you read now?

01 21 00 19 CMP Loud and clear, Jack.

01 21 00 20 CC Okay. Donn, you are a little better there on  
S-band.



01 21 40 13 CC Apollo 7, Houston. You want to turn up your S-band volume? We're just about to lose you over Carnarvon.

01 21 40 22 CMP Roger.

01 21 40 23 CC And, Donn, we want to make a radio check through this backup site at Honeysuckle, just to check it out.

01 21 40 38 CMP Okay, Jack.

HONEYSUCKLE (REV 29)

01 21 41 27 CC Apollo 7, Houston through the Wind Site. How do you read?

01 21 42 54 CC Apollo 7, Houston through the Wind Site. How do you read?

01 21 42 59 CMP Weak, but clear, Jack. I'll turn the volume up.

01 21 43 02 CC Okay. You're loud and clear here.

01 21 43 06 CMP Roger. Sounds pretty good.

01 21 43 10 CC Roger. This is a backup site there in Australia.

01 21 43 12 CMP Understand. Jack, I've been looking at this horizon preparing for this midcourse navigation business; and at night, there just isn't any horizon that you can define in the sextant at all. There is one in the telescope, but I don't think that's accurate enough.

01 21 43 22 CC Okay.



01 22 21 07 CMP Jack, log me 12 click of water.

01 22 21 11 CC Say again. Say again, Donn.

01 22 21 17 CMP I said just record 12 clicks on the water  
gun for me.

01 22 21 22 CC Okay.

01 22 25 26 CC Apollo 7, Houston.

01 22 25 29 LMP Roger, Houston. Go.

01 22 25 31 CC Roger. You have a GO for 47 dash 1.

01 22 25 35 LMP Roger. GO for 47 dash 1 and log the LMP for  
12 clicks on the water gun.

01 22 25 40 CC Will do, and good morning.

01 22 25 43 LMP Good morning.

01 22 27 07 LMP Hey, Jack. So far this urine dump system has  
been pretty doggoned good.

01 22 27 17 CC Apollo 7, Houston. Go ahead.

01 22 27 20 LMP Roger. I said the urine dump system has been  
working beautifully so far.

01 22 27 25 CC Okay. Fine. Walt, did you have the VHF off  
just a minute ago?

01 22 27 34 LMP Yes, I did. I just got up, and I hadn't turned  
it on yet.

01 22 27 37 CC Okay. Fine.

CANARY (REV 30)

01 22 32 01 CC Apollo 7, Houston through Canary. Standing by.

01 22 32 04 LMP Roger. Hey, Jack. We have yet to activate  
the SPS line heaters.

01 22 32 13 CC Roger. Copy that. They look like they're holding real good.

01 22 32 30 LMP And I'm wondering, what are we planning on doing with the preliminary water boiler?

01 22 32 50 CC Roger. Walt, we're having a meeting down here on that very subject. We'll come up to you with a procedure for activating that primary water boiler to take it out.

01 22 33 05 LMP Roger.

01 22 35 59 CC Apollo 7, Houston.

01 22 36 03 LMP Go, Houston.

01 22 36 05 CC We have a flight plan update here. The landmark tracking that was planned for about 47 40 - the weather is very, very bad in those areas, and we are recommending that - we are asking you to delete that landmark tracking exercise.

01 22 36 30 CMP Roger. I just did a little bit using clouds as unknown landmarks and ran through the program. Seems to work okay. I got zero updates.

01 22 36 41 CC Okay. Real fine, Donn.

01 22 37 27 CC Apollo 7, Houston. We are showing the waste quantity down below 20 percent now; it looks real good to us here.

01 22 37 34 CMP Roger. We're shutting it off right now.

01 22 37 36 CC Okay.

01 22 38 29 CC Apollo 7, Houston. You're 1 minute LOS  
Canaries. I'll pick you up in about 14  
minutes at Tananarive.

01 22 38 38 CMP Roger.  
TANANARIVE (REV 30)

01 22 53 16 CC Apollo 7, Houston through Tananarive. Stand-  
ing by.

01 22 53 21 CMP Roger.

01 22 57 48 CC Apollo 7, Houston. One minute LOS Tananarive;  
Carnarvon in about 9 minutes.

01 22 57 48 CMP Roger.  
CARNARVON (REV 30)

01 23 06 58 CC Apollo 7, Houston through Carnarvon. Standing  
by.

01 23 07 03 LMP Roger.

01 23 07 10 LMP Jack, could you give us a map update?

01 23 07 12 CC Will do. We're working on it.

01 23 08 00 CC Apollo 7, Houston with your map update.

01 23 08 08 LMP Roger. Go.

01 23 08 09 CC REV 29: your GET is a node of 46 plus 06 plus  
31; longitude will be 129.2 degrees west; the  
right ascension was 06 plus 01.

01 23 08 32 LMP Roger. 46 plus 06 plus 31, 129.2 west.

01 23 08 38 CC Roger. That was for REV 29. You are on 30  
now.

01 23 08 48 LMP Thank you.

01 23 08 54 LMP What's the news this morning?

01 23 08 58 CC Give you some scores if you would like.

01 23 09 02 LMP Go.

01 23 09 05 CC Any particular ones you're interested in?

01 23 09 09 LMP USC, UCLA.

01 23 09 47 CC Okay. Walt, Penn State beat UCLA 21 to 6.

01 23 09 57 LMP Boo.

01 23 10 03 CC And USC beat Stanford 27 to 24. Oklahoma beat Houston 21 to 17.

01 23 10 14 LMP That's a surprise.

01 23 10 19 CC And here is a good one. Ohio State beat Purdue 13 to 0.

01 23 10 25 LMP Who beat Purdue?

01 23 10 27 CC Ohio State.

01 23 10 31 LMP Eat 'em up, Buckeyes.

01 23 11 38 CC Apollo 7, Houston.

01 23 11 40 LMP Roger, Houston.

01 23 11 42 CC Roger. Big news in the paper today was Apollo meets with second stage.

01 23 11 49 LMP What was that?

01 23 11 50 CC That was the big news. Apollo meets with second stage, front page stuff.

01 23 11 59 LMP Almost makes it worth it. I tell you, you had three of us sweating up here.

01 23 14 04 CC Apollo 7, Houston. Do you want to turn up your S-band? We are about 1 minute LOS Carnarvon.

We will pick you up over Honeysuckle and - almost instantaneous here.

01 23 14 14 LMP Wilco.

01 23 14 45 CC And, Apollo 7, just continuing with the morning news - basically, the headlines this morning are all about the rendezvous. They had another heart transplant in Houston early this morning. It is going well at last report.

HONEYSUCKLE (REV 30)

01 23 15 04 LMP Thank you.

01 23 15 05 CC Have you got the Air Force-Navy score? Air Force over Navy 26 to 20, Southern Cal over Stanford, Ohio State over Purdue, Texas 26 Oklahome 20, Notre Dame beating Northwestern 27 to 7.

01 23 16 00 CC Apollo 7, Houston. I have some flight plan updates here for you when you are ready to copy.

01 23 16 07 LMP Roger. Wait one. The last score we got was 27 to 7. Ready to copy in a second.

01 23 16 13 CC Okay.

01 23 16 15 LMP Ready to copy. Go.

01 23 16 17 CC Okay. At this G&N attitudes control test over Hawaii, we want to make sure that we have the high bit rate before we start it, and we acquire Hawaii at 49 08 45. It's a little bit

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different than it is in the flight plan; we just wanted to make sure we had the high bit rate before we started it. And the same way with the attitude control test which is at 50 40. On REV 33, the P52 IMU realign at 51 30, we would like you to -

01 23 17 02 LMP

A little slower, please, Jack.

01 23 17 04 CC

Okay. The IMU realign at 51 30, we would like you to use option 3 instead of option 2. We would like to keep the current REFSMMAT, and also we would like you to report your gyro torquing angles at the conclusion of this realignment.

01 23 17 23 LMP

Roger. Got you.

01 23 17 35 CC

Okay. The - at 52 hours to P20 navigation, sunrise will be at 52 06. This might be useful for your S-IVB tracking at 320 miles.

01 23 17 59 LMP

Roger. 52 06.

01 23 18 02 CC

And that's it right now.

01 23 18 09 LMP

Okay. I have a question here on the attitude control test. You've got high bit required 20 to 30 minutes on the G&N attitude control test. Very shortly thereafter, you have 10 to 20 minutes of G&N attitude control test. How are we going to get all that

and - are they going to get all that dumped  
so we can have our tape back?

01 23 18 30 CC Okay. Stand by here. I'll get EECOM on that.  
01 23 18 34 IMP Can't you get a lot of that in real time,  
rather than in tapes?  
01 23 18 38 CC Yes, we can. Stand by, Walt.  
01 23 19 03 CC Apollo 7, say again.  
01 23 19 08 IMP We didn't call.

HUNTSVILLE (REV 30)

01 23 40 47 CC Apollo 7, Houston through the Huntsville.  
01 23 41 23 HTV Two-way lock. Out of range.  
01 23 41 36 CC Apollo 7, Houston through the Huntsville.  
Standing by.

GUAYMAS through BERMUDA (REV 30)

01 23 45 16 CC Apollo 7, Houston through Guaymas.  
01 23 45 22 CMP Roger, Jack.  
01 23 45 26 CC Roger. Dom, we'd like to get some continuing  
remarks on your habitability there: how things  
are going, your living conditions, sleep and  
crew condition, and things like that. And by  
the way, Walt, we would like to ask you how  
you are feeling this morning and if that one  
Actifed that you took helped out.  
01 23 45 58 IMP Roger. I took one Actifed; my nose was slightly  
stuffy last night, but it didn't give me any

problem while sleeping. I feel fine this morning. I feel in good shape.

01 23 46 08 CC

Okay. Real good news.

01 23 46 10 LMP

...

01 23 46 15 CC

If you feel like you want to take any more, let us know, okay?

01 23 46 21 LMP

Roger. All of us are somewhat concerned. We all drinking out of the same water system and everything, and we all have one cold. But Wally seems to be getting a lot better, too.

01 23 46 29 CC

Okay. That's real fine news.

01 23 46 32 LMP

In general, it's been going real well up here. It's reasonably comfortable: air temperature is fine, the humidity is fine. We're just perking along; and with a little extra time, everybody is in pretty good shape. Little exercise now and then so everybody is in good shape.

01 23 46 52 CC

Okay. That's fine.

01 23 46 54 CMP

I got 7 solid hours of sleep last night; and Walt just had about six, and he's up and Wally's still asleep.

01 23 47 01 CC

Okay. That's fine.

01 23 47 04 LMP

As far as humidity goes, I'd say it's relatively comfortable in here. Several things - small things we've noticed along the way, but

most of the things we've worked out ahead of time, it looks like.

01 23 47 19 CC Okay. Copy.

GUAYMAS through BERMUDA (REV 31)

01 23 47 21 LMP I feel very strongly on the sleeping bit. The sleeping bag is not as good to have the shoulder harness and lap belt to strap you down against something, and I think we all feel kinda that way.

01 23 47 34 CC Okay. Copy that.

01 23 47 41 LMP Other than that, I think it is rather amazing how well and quickly we all been able to adjust to IVA.

01 23 47 52 CC Okay.

01 23 48 54 LMP You might log that - from my personal observation at least - that there's far too much sweet in the diet, and I feel like we have more food than we need. I think Wally feels the same way. Donn seems to be eating most of his, though.

01 23 48 14 CC Okay.

01 23 48 18 LMP I would suspect that in another couple of days I'm probably just going to skip a whole meal in order to keep up with him.

01 23 48 26 CC Okay. Copy.

01 23 48 35 LMP Another comment is that the exerciser is very, very good thing to make you feel better up here. I find that after we're up here - about

the middle of the first day - we started noticing that your lower abdominal muscles seem to be a little sore. Always floating around in this seat position, and there is certainly enough strain taken off them, and now they kinda want to bunch up, and if we exercise once in awhile, we feel a lot better.

01 23 49 03      CC      That's a good note.

01 23 49 16      LMP      Did you read that, Houston?

01 23 49 18      CC      Roger. Copy that. That's real fine news.

01 23 49 29      CC      And Walt, sometime - Walt and Donn, sometime after Wally gets awake and the three of you have a real good chance, we'd like to get a good status check on your windows.

01 23 49 40      LMP      Roger. I can give you that now if you'd like.

01 23 49 42      CC      Okay. Let's do.

01 23 49 46      LMP      Okay. Window number 5 is still - I'd say - in very good shape. Nothing compared to the pictures I've seen of a bad window in Gemini. Window number 4 is still in good shape - I mean, no concern about taking pictures out of it at all. Window number 3 has been continually deteriorating since about the first day, and you can see moisture collected on the inside of the outer pane and kinda spotty in the middle. You can see horizons out of it, but not a heck

of a lot more. Window number 2 is still in good shape. On the left front side of it, you can see a slight amount of discoloration that may eventually work its way in on it. And window number 1 is similar to window number 5 except that it seems to have a lot of these little snow flakes settling on it. Window number 1 is right close to the urine dump and probably is coming from there.

01 23 51 03      CC      Okay. Copy that.

01 23 51 23      CC      Okay. We'll have you all the way across the States; we'll just keep standing by.

01 23 51 28      LMP      Okay. You might make note that I haven't had any problems with food bags yet. Several comments though; that pill is supposed to be broken up, and you're doing well when you get the pill inside the bag. I don't know anybody who's got fingers strong enough to break it. Also, the gum doesn't have any Velcro on it whenever it shows up, and it's turning out that it's pretty significant that everything have a patch of Velcro on it.

01 23 52 02      CC      Okay. We copy that.

01 23 52 04      LMP      Also, the wet wipe that's packed with the fecal bags, they do not have Velcor on it, and they need it.

○

01 23 52 15 CC Okay.  
01 23 52 22 LMP The temperature inside the cabin has been very comfortable. Wally and Donn put on their in-flight coveralls. They got out of the suit. I've been in my GWG ever since, and I guess when we start with the show business, I'll have to get dressed for it.

01 23 52 51 CC Okay. Copy that.  
02 00 00 00 CC Apollo 7, Houston.  
02 00 00 52 LMP Roger, Houston. Go.  
02 00 00 54 CC On the G&N control check that you were asking about - over Hawaii - that will be done over the states in high bit rate and real time. It won't require any DSE operation other than normal.

○

02 00 01 10 LMP Roger. We will stand by for your verification that you have high bit rate before we start it.  
02 00 01 16 CC Okay. That's real fine.

○

CANARY (REV 31)

02 00 06 24      CMP      Houston, Apollo 7.

02 00 06 26      CC      Go ahead, 7.

02 00 06 29      CMP      Roger. I just did that daylight alignment, and we're told to pick a pair, and I picked out Ras-Alhague and Funki. Rash-Alhague came in clear enough to mark on, but Nunki was a total loss because it's too close to the earth's limb.

02 00 06 47      CC      Okay. Understand you got a daylight alignment.

02 00 06 51      CMP      Roger. Well, I didn't complete it. I got as far as having to pick a pair of big looking stars, but you will never be able to find them yourself. But I saw this Ras-Alhague when I picked out something in the sextant and marked on it. I assume it was Ras-Alhague because that's what we were going for. But the point is, daylight alignments aren't going to work too well unless you get far enough away from limb of earth and other bodies.

02 00 07 20      CC      Okay. Copy that, Donn.

02 00 07 23      CMP      And I think that doing a P51 under these conditions would be a dead loss.

02 00 07 32      CC      Roger. Copy.

02 00 12 24      CC      Apollo 7, Houston. One minute LOS Canary. Tananarive in about 12 minutes.

02 00 12 31      SC      Roger.

## TANANARIVE (REV 31)

02 00 25 58 CC Apollo 7, Houston through Tananarive.

02 00 26 02 SC Roger.

02 00 29 21 CMP Houston, Apollo 7.

02 00 29 24 CC Go ahead, 7.

02 00 29 26 CMP Roger. We've got a lockup in the comp cycle of program 21. Could you get a G&N bearing on us, or give us a handy dandy on what to do to correct that to get out of it?

02 00 29 43 CC Okay. I understand that you are locked up into program 21?

02 00 29 50 CC Is that correct?

02 00 29 51 CMP In that time interim, we hit the PROCEED button, and the COMP light has been on ever since.

02 00 30 07 CC Okay. Stand by, 7. We're getting somebody to help us out here.

02 00 30 12 CMP Roger.

02 00 31 00 CC Apollo 7, Houston.

02 00 31 04 CMP Go.

02 00 31 06 CC Donn, can you tell us at what display you had in the program when you hit the PROCEED?

02 00 31 15 CMP We had the time ... went into normal ground track, and it usually only takes about a minute to calculate the position.

02 00 31 28 CC Could you say again? We missed the display.

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02 00 31 50 CC Apollo 7, Houston. I understand you had the time in there, and it was going to integrate ahead to figure out where you were, and that is the procedure you are talking about?

02 00 32 00 CMP That's right.

02 00 32 01 CC Roger.

02 00 32 14 CC What time did you put in there, Apollo 7?

02 00 34 05 CC Apollo 7, we're going to have continuous coverage here through ARIA 1 until we reach Carnarvon.

ARIA 1 (REV 31)

02 00 37 12 CC Apollo 7, Houston through ARIA 1.

02 00 37 44 CC Apollo 7, Houston through ARIA 1.

02 00 38 05 CC Apollo 7, Houston through ARIA 1.

02 00 39 16 SC This is Apollo 7.

02 00 39 20 CC Apollo 7, Houston.

02 00 39 30 CC Apollo 7, Houston. We're reading you five-by.

CARNARVON (REV 31)

02 00 42 05 CC Apollo 7, Houston through Carnarvon.

02 00 42 07 CMP Roger. Hear you, CAP COMM Houston.

02 00 42 10 CC Roger. Real fine. Did you come out okay on P21, Donn?

02 00 42 15 CMP Yes, it finally quit integrating. I'd already asked it to go to FOO, so it went straight to FOO.

02 00 42 21 CC Okay. Real fine. I've got some discussion on the primary evaporator to take up with Walt here.

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02 00 42 31 LMP

He's listening. He's writing.

02 00 42 34 CC

Okay. There will be some procedures, so you might want to copy this down. What we would like to do is to determine the status of the primary water boiler, and then we - therefore, we intend to activate the primary evaporator over the stateside pass this revolution. So when bringing the evaporator on, Walt, we want you to open the back pressure valve manually for 2 seconds, since we're not sure how much water is in the evaporator, and this would minimize any possibility of carrying excess water through the steam duct and possibly freezing it. Then on the ground cue over the States, we would like you to first put the glycol evaporator H<sub>2</sub>O flow switch to AUTO. Second, put the glycol evaporator steam pressure to MANUAL. Third, go DECREASE for 2 seconds. Observe the temperature decay on the primary evaporator outlet. If you don't get any decay, we want to go DECREASE for 2 seconds more. If you get a temperature decrease, then wait 30 seconds; place the evaporator steam pressure to AUTO. We'll watch it all from the ground, but if you observe any anomalies in your out-of-ground conta, we would like you to troubleshoot per

the malfunction procedures recorded on high bit rate on DSE and report it to the next site.

And if you want any of this repeated, I'll go over it with you - a little slower.

02 00 44 20 IMP

I could write about half that fast, and I only got the first three steps, Jack. Back pressure open for 2 seconds; do you want me to do that prior to getting into the States?

02 00 44 29 CC

No, we will do this when we hit the States, so we can watch it here. We will tell you when we've got good data; and then when you bring it on, open it for 2 seconds. This will all be on ground cue. And then - I'll read these steps again, a little slower, Walt. First step, H<sub>2</sub>O flow to AUTO; second, steam pressure to MANUAL; third, decrease steam pressure switch to DECREASE for an additional 2 seconds. Observe for a temperature decay on the EVAP OUT temperature. Okay. If you don't get any temperature decay, decrease the steam pressure for 2 additional seconds. Then, if you get a temperature decrease on the EVAP OUT temperature, wait 30 seconds; then place the glycol EVAP OUT steam pressure to AUTO. Okay. If you get any anomalies and you're out of ground contact, troubleshoot it per the malfunction

procedures, recording it on high bit rate, and we'll pick you up at the next site.

02 00 46 24 IMP Roger. Jack, I got step 4. Decrease steam pressure for 2 seconds, watch the glycol EVAP OUT temperature decrease, and disconnect set.

02 00 46 32 CC Okay. After temp decrease is observed, wait 30 seconds; then place the steam pressure switch to AUTO.

02 00 46 55 IMP I have here decrease something for 2 additional seconds.

02 00 47 02 CC Okay. Let me go over it again.

02 00 47 10 IMP Two seconds.

02 00 47 12 CC Okay. You go to MANUAL, decrease the steam pressure for 2 seconds; that's step 3. If you don't get any temperature decay, decrease - third, decrease steam pressure switch to DECREASE for an additional 2 seconds. That's step 4.

02 00 47 35 IMP Roger. I understand that if I don't get any pressure decrease - temperature decrease in how long a time period?

02 00 47 48 CC About 30 seconds - give it 30 seconds, Walt, to note any temperature change.

02 00 47 57 IMP Roger. The back pressure open for 2 seconds on your cue; water flow to AUTO on cue. Steam pressure to MANUAL, decrease steam pressure

for 2 seconds. Watch the glycol EVAP OUT temp decrease; if no temp decrease in 30 seconds, then I - decrease steam pressure for another 2 seconds. If I get a decrease, I wait 30 seconds and then go to AUTO. Any anomalies, I troubleshoot.

02 00 48 23 CC That's good; you got it. Okay, Apollo 7. You might want to turn your S-band volume up; we're about to pick up Honeysuckle here.

02 00 48 38 LMP Roger, Jack.

02 00 48 39 CC We'll just be standing by here. We don't have anything special for you.

02 00 48 43 CMP Okay. You might find out what rate they want set up for this G&N attitude control test.

02 00 48 51 CC I didn't copy that, Donn. You were a little garbled.

02 00 48 56 CC I said, the G&N test: what rate do you want put in?

02 00 48 59 CC Okay. Stand by.  
HONEYSUCKLE (REV 31)

02 00 50 51 CC Apollo 7, Houston.

02 00 51 03 CC Apollo 7, Houston.

02 00 51 19 CC Apollo 7, Houston.

02 00 51 32 CC Apollo 7, Houston.

02 00 51 54 CC Apollo 7, Houston through Honeysuckle.

02 00 51 00 LMP Roger, Jack.

02 00 52 00 CC Okay. You're five-by. On Donn's question, was that weight W-E-I-G-H-T or rate R-A-T-E?

02 00 52 09 CMP R-A-T-E, Jack.

02 00 52 11 CC Okay. Okay. Stand by.

02 00 55 02 CC Apollo 7, Houston.

02 00 55 09 CMP Roger. Go, Houston.

02 00 55 10 CC Okay. Donn, what we would like to have is a spacecraft maneuver rate, at somewhere - rate 1 degree per second or greater. In the DAP, we would like you to set 4 degrees per second in the rate.

## HAWAII through ANTIGUA (REV 31)

02 01 09 21 CC Apollo 7, Houston.

02 01 09 35 CC Apollo 7, Houston through Hawaii.

02 01 09 59 CC Apollo 7, Houston.

02 01 10 19 CC Apollo 7, Houston with an update.

02 01 10 44 CC Apollo 7, do you read? Houston.

02 01 10 47 CMP Roger.

02 01 10 49 CC Okay. Donn, we have an update on DAP rate deadband we'd like you to set in; we would like you to set in two-tenths of a degree per second for the rate deadband for this G&N attitude control test.

02 01 11 05 CMP Okay. I got that in.

02 01 11 08 CC Okay. Real fine.

02 01 11 15 CMP Jack?

02 01 11 16 CC Go ahead.

02 01 11 17 CMP I'm not going to do that 1 degree per second because it wastes too much fuel. What I will do is just go ahead and put it in G&N attitude hold at deadband for two-tenths rate and then let it sit around here for as long as you want to look at it.

02 01 11 32 CC Okay. You want to - we copy that. We'll give you - we haven't picked up high bit rate here; we'll give you a hack as soon as we have high bit rate.

02 01 11 44 CMP Okay. I'm ready to copy your log data.

02 01 11 48 CC Roger. I'll give you that. Opposite omni first.

02 01 12 04 CC Apollo 7, Houston. We have high bit rate; you can start the G&N attitude control test; and, Walt, I will give you the block data.

02 01 12 13 IMP Roger. This is ... now.

02 01 12 23 CC Okay. Block data for block number 6 as follows:  
033 dash 4C plus 314 minus 1450 52 plus 05 plus  
09 4335, 34 dash 3C plus 200 plus 1500 53 plus  
21 plus 42 4119, 035 dash 3B plus 250 plus 1390  
054 plus 55 plus 07 4143, 036 dash 4A plus 250  
minus 1659 056 plus 46 plus 40 4785, 037 dash 3A  
plus 315 plus 1390 058 plus 07 plus 17 4439,  
30-38 dash 3A plus 283 plus 1374 059 plus 42  
plus 35 4645.

02 01 14 32 IMP Roger. Readback follows: 033 dash 4 Charlie plus 314 minus 1450 052 05 09 4335, 34 dash 3 Bravo plus 200 plus 1500 053 plus 21 plus 42 4119, 035 ... plus 315 plus 1390 058 plus 07 plus 17 4439, 38 dash 3 Able plus 283 plus 1374 059 plus 42 plus 35 and 4645. Over.

02 01 14 40 CC Roger. Walt, we had a transition from Hawaii to Huntsville, and I lost a little bit of it here. The second block was 034 dash 3 Charlie instead of 3 Bravo. And I lost you right after 035 dash 3 Bravo. Could you give me that down to the beginning of 037 dash 3 Able?

02 01 16 13 IMP Roger. I'll pick up. 035 dash 3 Bravo - I got your correction - 034 dash 3 Charlie and 035 dash 3 Bravo plus 250 plus 1390 054 plus 59 plus 07 4143, 036 dash 4 Able plus 250 minus 1659 056 plus 46 plus 40 4785. Over.

02 01 16 41 CC Roger. That's got it. We copied five-by.

02 01 21 14 CC Apollo 7, Houston.

02 01 21 17 IMP Go ahead, Houston, Apollo 7.

02 01 21 19 CC Roger. On this primary evaporator activation: we are going to wait until we get a RAD OUT temperature above 50 before we start it.

02 01 21 31 IMP Roger. Do you have any idea about what time you want to do that? It doesn't get above 50 until after we have been in a daylight pass most of the pass.

0 02 01 21 44 CC Roger. We are just discussing that now. It looks like the way it's coming up, it's going to be a little bit.

02 01 21 52 IMP Roger. It hasn't been coming up. You are talking about the evaporator outlet temperature, I assume; it hasn't been coming above 50, until ... to the last part of the daylight pass.

02 01 22 01 CC No, we were talking about the RAD OUT temperature, Walt, just so we can make sure that the boiler is going to really work.

02 01 22 12 IMP Okay. I'm showing a RAD OUT temperature now of just about 50.

02 01 22 18 CC Okay. Stand by here.

02 01 22 29 CC We are only showing a RAD OUT of 42 degrees, and we are going to check CAL curve right now.

02 01 22 36 IMP Roger. I am reading 49, about on border; ... 3 point scale. Let's say 45 to 50.

02 01 22 46 CC Okay.

02 01 25 04 CC Apollo 7, Houston.

02 01 25 08 CMP Go, Houston.

02 01 25 10 CC Okay. Donn, on that RAD OUT, when - we are reading 43 now, and there is a big spread between your value and ours, and ours is correct according to the CAL curve, so it will be a little bit yet before we get to activation of the evaporator.

HAWAII through ANTIGUA (REV 32)

02 01 25 27      CMP      Okay.

02 01 26 24      CMP      Houston, Apollo 7.

02 01 28 26      CC      Go ahead, 7.

02 01 28 27      CMP      Are you on VHF now?

02 01 28 32      CC      Affirmative. We are receiving VHF; we are  
SIMO on transmit.

02 01 28 38      CMP      Okay. Fine. There for a while, it seemed you  
were only on S-band.

02 01 28 50      CC      Apollo 7, can you tell us what direction you  
are pointed at relative to the sun?

02 01 28 58      CMP      What direction - what? Say again, Jack. Why  
don't you read our gimbal angles and figure  
it out? You can probably do it better than  
we can.

02 01 29 10      CC      Roger.

02 01 29 12      CMP      It's coming in the left side window; it's a  
little bit forward of us.

02 01 29 17      CC      Okay.

02 01 36 10      CC      Apollo 7, Houston.

02 01 36 21      CC      Apollo 7, Houston.

02 01 36 37      CC      Apollo 7, Houston.

02 01 36 57      CC      Apollo 7, Houston. We are going to delay  
activation of the primary evaporator until  
Ascension. We will contact you at Ascension  
in approximately 8 minutes.

0 02 01 37 51 CC Apollo 7, Houston. Thirty seconds LOS Antigua.  
 ASCENSION (REV 32)

02 01 47 09 CC Apollo 7, Houston through Ascension.

02 01 47 47 CC Apollo 7, Houston through Ascension.

02 01 47 55 LMP Roger. This is Apollo 7. We're standing by  
 for your evaporator procedure. I can - -

02 01 48 00 CC Okay. Walt, we're going to wait until we  
 get high bit rate here. We've got a keyhole  
 effect which is going to delay our high bit  
 rate for a minute or so, and then we'll be  
 ready to start.

02 01 48 11 LMP Roger.

02 01 49 03 CC Apollo 7, Houston. We're ready to start on  
 the primary evaporator test. You can open  
 the back pressure valve manually for 2 seconds.

02 01 49 12 LMP Are you ready to receive this procedure?

02 01 49 20 CC Okay. You want to put your water valve to  
 AUTO?

02 01 49 26 LMP You want me to decrease for 2 seconds first,  
 don't you?

02 01 49 35 CC Okay. Walt, we want to go AUTO first on the  
 water valve.

02 01 50 07 LMP Jack, on S-band.

02 01 50 11 CC Okay. Walt, read you five-by. You want to - -

02 01 50 16 LMP The steam pressure came down to .15, and glycol  
 evaporator outlet temperature is coming down.

0 02 01 50 22 CC Okay. Understand.

02 01 50 34 LMP I am going to go AUTO on the steam pressure because the glycol evaporator outlet temperature is down.

02 01 50 39 CC Okay. We'd like you to hold it for 15 seconds.

02 01 50 47 LMP Do what?

02 01 50 50 CC Hold off on putting the steam pressure valve to AUTO for 15 seconds here.

02 01 50 55 LMP Roger. I had it in there; I just took it back.

02 01 50 58 CC Okay.

02 01 51 15 CC Okay. Apollo 7, you can put the steam pressure valve to AUTO now.

02 01 51 20 LMP Roger. It's in AUTO. The glycol evaporator outlet TEMP is reading 38 on board.

02 01 51 30 CC Roger. We copy.

02 01 51 44 CC Apollo 7, Houston. We are about 1 minute LOS; we would like you to continue this procedure; watch the glycol EVAP OUT temperature. If you get any anomalies, then record it on the high bit rate; we'll pick you up over Tananarive.

02 01 51 58 LMP Roger. What time for Canaries?

02 01 52 03 CC Tananarive will be - 50 hours, 1 minute.

02 01 52 42 CC Okay.

TANANARIVE (REV 32)

02 02 01 10 CC Apollo 7, Houston through Tananarive.

02 02 01 14 CMP Roger, Jack. And the water boiler seems to be operating normally now.

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02 02 01 17 CC Okay. Real fine.

02 02 01 20 CMP It evaporated normally after we ...

02 02 01 27 CC I think he said it evaporated normally since  
he left Ascension. I wonder if he is evapo-  
rating now.

02 02 07 43 CC Apollo 7, Houston. One minute LOS Tananarive;  
we pick up ARIA 1 in about 3 minutes. We'll  
have continuous coverage through Carnarvon.

02 02 07 54 CMP Apollo 7, Roger.

02 02 08 37 CMP This is Apollo 7.

02 02 08 41 CC Go ahead, 7.  
ARIA 1 (REV 32)

02 02 10 34 CC ARIA 1, go REMOTE.

02 02 12 16 CC Apollo 7, Houston through ARIA 1.

02 02 12 37 CT ARIA 1 AOS.

02 02 12 40 CC Apollo 7, Houston through ARIA 1.

02 02 13 37 CC Apollo 7, Houston through ARIA 1.  
CARNARVON (REV 32)

02 02 16 56 CC Apollo 7, Houston through Carnarvon.

02 02 17 00 CDR Roger, Houston.

02 02 17 32 CC Apollo 7, Houston. We have a CSM and S-IVB  
state vector update we'd like to send you.  
Would you go to ACCEPT?

02 02 17 40 CDR You have it.

02 02 17 42 CC Coming up.

02 02 18 08 CDR Houston, Apollo 7.

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02 02 18 11 CC Go ahead.

02 02 18 13 CDR In the flight plan, we have AOS Hawaii at about 5 plus 45.

02 02 18 19 CC Roger.

02 02 18 20 CDR Control test.

02 02 18 23 CC Roger.

02 02 18 24 CDR It took us 20 minutes. We performed that during the tracking exercise for the rendezvous. I'd like to hold off that type of PPO until after we have our third burn.

02 02 18 38 CC Okay. Stand by.

02 02 18 40 CDR Roger.

02 02 19 05 CC Apollo 7, Houston. We concur on delaying the attitude control test until after burn 3.

02 02 19 13 SC Roger. I think we met the requirement, Jack, but if we can check the data from the previous revs, we might not have to do that one.

02 02 19 20 CC All right. Let's do that. We'll check it.

02 02 19 44 CC Apollo 7, Houston.

02 02 19 47 CDR Go ahead, Jack.

02 02 19 49 CC We're trying to get an inertial attitude hold angle that we would like you to go to to further evaluate this primary evaporator, and we'll try to get you these angles early so you can take your time maneuvering there. What we want to do is heat up these radiators as much as

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possible, and it won't have to be a tight attitude hold at all, just want to get as maximum a heat on the radiator as we can to give us a lot of confidence in that primary evaporator.

02 02 20 19 CDR Roger. What time spread are you talking about?

02 02 20 21 CC Next stateside pass.

02 02 20 23 CDR Wilco.

02 02 21 47 CC Apollo 7, Houston.

02 02 21 50 CDR Go ahead.

02 02 21 51 CC Roger. We have roll, pitch, and yaw gimbal angles for this evaporator evaluation.

02 02 21 59 CDR Go.

02 02 22 00 CC Okay. Roll 218, pitch 129, yaw 18.

02 02 22 13 CDR Jack, is that 18 degrees?

02 02 22 15 CC Roger. 018, excuse me. Yaw is 018.

02 02 22 28 CC You can maneuver there as slowly as possible and set up the MAX deadband, and we'll evaluate this over the States.

02 02 22 40 CDR Okay. What time would you like this new attitude?

02 02 22 50 CC For the day pass, Wally, over the States.

02 02 22 54 CDR Okay. It'll be ... approximately 50 hours and 45 minutes.

02 02 23 00 CC Okay. Real fine.

02 02 23 03 SC I'll read back: 218 roll, 129 pitch, and yaw.

02 02 23 08 CC That's 218 roll, 129 pitch, 018 yaw.

0 02 02 23 16 CDR I have that.

02 02 23 18 CC Okay.

02 02 23 24 CC And, 7, we have finished with the loads; we have verified them. The computer is yours.

02 02 23 33 CDR Roger.

02 02 23 38 CDR Jack, do you have a NAV update for us?

02 02 23 42 CC Say again.

02 02 23 44 CDR Do you have a NAV update for us after that state vector load?

02 02 23 50 CC Roger. That was CSM and S-IVB state vector.

02 02 23 55 CDR Roger. Don't we do the NAV update to validate?

02 02 23 48 CC Okay. Stand by.

02 02 24 11 CC I have your NAV check; are you ready to copy?

02 02 24 19 CDR Stand by. Okay. Go.

02 02 24 22 CC Okay. Sextant track time 051 plus 35 plus 0000 minus 2779 plus 02505 1549.

02 02 24 49 CDR Roger. 051 35 0000 minus 2779 plus 02505 1549. Over.

02 02 24 59 CC Roger.

02 02 25 06 CDR Did you read that, Jack?

02 02 25 08 CC That's a correct readback; that's 154.9.

02 02 25 14 CDR 154.9. Roger. And copy ...

02 02 25 19 CC Okay.

02 02 25 22 CMP Okay. It looks like we're right on, doesn't it?

02 02 25 27 CDR That's speedy work up here, Donn.

02 02 25 33 CC Stand by.

02 02 25 35 CDR ... the DSKY. You've got an update.

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HAWAII through ANTIGUA (REV 32)

02 02 43 13 CC Apollo 7, Houston through Hawaii.

02 02 43 18 CDR Roger, Houston. We're drifting in attitude now.

02 02 43 21 CC Roger. Real fine. Wally, when we hit the States, we'd like to switch over to a deadband as long as we are holding attitude for this radiator - or evaporator evaluation. We'd like to switch over to a deadband, and we'll kill that DTO, that G&N attitude control test at the same time. I will give you a call over California when we would like to set in the rate.

02 02 43 54 CC And it --

02 02 43 55 CDR The deadband is expensive; it's about 5 pounds an hour, and we've done that during the rendezvous maneuver.

02 02 44 04 CC Roger. We understand that. This will only be for a minimum of 10 minutes.

02 02 44 09 CDR Bill, that's about 1 pound.

02 02 44 11 CC I mean --

02 02 44 12 CMP Prior to the SPS burns about 5 to 10 minutes each. - We're saying that SPS will be depleted.

02 02 44 32 CDR And by the way, Houston, Hawaii is part of the United States now.

02 02 44 38 CC Roger. I understand, Wally.

02 02 44 40 CDR You are showing your age, Jack.

02 02 47 27 CDR Houston, Houston, Apollo 7.

02 02 47 31 CC Go ahead, 7.

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02 02 47 33 CDR Roger. There is something we have never made note of before. It happened during spacecraft tests and does here as well. When the twelfth maneuver is put in, the gimbal drive reflects that maneuver - even though the clutch current is OFF - plus or minus about half a degree.

02 02 47 53 CC Roger. I understand.

02 02 47 55 CDR It's just an anomaly; might surprise subsequent crews.

02 02 48 00 CC Okay. We copy.

02 02 48 01 CDR No problem.

02 02 48 29 CDR Houston, the reason we are resisting burning up fuel is that we're not really -

02 02 49 08 CDR We just had a good view of a contrail en route to Hawaii.

02 02 49 12 CC Roger. Opposite omni, 7.

02 02 49 15 CDR Roger.

02 02 49 17 CC Wally, we are having some more discussion on that MIN rate over the States here. We'll let you know.

02 02 49 26 CDR We're right on the border line on fuel as far as making our line good.

02 02 49 31 CC Roger. We understand.

02 02 49 34 CDR We're doing the next steps later.

02 02 51 00 CT Huntsville ... two wheel log, valid range.

02 02 57 04 CC Apollo 7, Houston.

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0 02 02 57 09 CDR Go ahead.

02 02 57 11 CC Roger. We'd still like you to go ahead and set in that MIN rate, complete this G&N attitude control test. This will be the minimum cost fuel-wise right now.

02 02 57 22 CDR Roger. ...

02 02 57 26 CC Roger. We understand.

02 02 57 28 SC Okay. I don't think you people understand real well. We are still testing.

02 02 57 37 CC Roger. Understand.

02 02 57 50 CDR All ... be prepared to debrief on this subject when we get back.

02 02 57 54 CC Yes, sir.

02 02 57 58 CDR It's in hold now.

02 02 58 14 CC Roger. We are timing right now. We will give you a MARK in 10 minutes, and the test will be complete.

02 02 58 20 CDR Roger.

02 03 01 47 CDR Deke, you look like you're wide open today.

02 03 01 52 CC Roger.

02 03 01 54 CDR You got a little spotty cue over Dallas, a little spotty cue offshore. Looks like you have about three- or four-tenths coverage today.

02 03 02 05 CC Okay. I haven't been outside for about 6 hours, so I don't know.

02 03 03 51 CDR Jack, after this G&N burn, do you want us to hold it in SCS like programed?

## HAWAII through ANTIGUA (REV 33)

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02 03 04 01 CC Roger. Wally, after we get through this, you've got about 4 minutes left, then hold attitude in the cheapest way possible there.

02 03 04 10 CDR Roger.

02 03 04 13 CC And as soon as we hit the night pass, you are on your own.

02 03 05 18 CDR Grand Bahamas looked beautiful today.

02 03 05 22 CC Say again, Wally.

02 03 05 23 CDR The Grand Bahamas looked beautiful today. We took a lot of good pictures with the Hasselblad. We got one of Houston, one of Tampa; that's about the rate. It takes about 3 minutes to recock it.

02 03 05 38 CC Roger. We copy.

02 03 05 40 CDR Probably the loop inside is jamming it up. It's in the box itself, not in the lens shutter mechanism and not in the magazine.

02 03 05 48 CC Okay. We copy that.

02 03 05 57 CDR We recommend carrying at least two of these boxes along and the accessories to go with them.

02 03 06 08 CC Okay. We copy that.

02 03 06 10 CDR Roger.

02 03 06 14 CMP Houston, the water boiler hasn't been boiling since we been - have you been putting all the

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heat on the radiator, or making believe it's cool? Over.

02 03 06 24 CC We've been trying to get the MAX heat on the radiator; we expect it to start boiling here. We are showing a RAD OUT now of 50.

02 03 06 31 CMP Roger. So am I, but my glycol evaporator outlet sensor's still seeing 48.

02 03 06 38 CDR Jack, give me a reading when we go off this DAP control.

02 03 06 42 CC Roger. You have got about a minute and three-quarters.

02 03 06 45 CDR Okay. Then I'll fly in SCS for how long?

02 03 06 50 CMP Looks like it's starting to boil. Let's see if it overshoots.

02 03 06 57 CC Roger. We concur.

02 03 06 59 CDR How long will I stay in the SCS mode?

02 03 07 03 CC Stand by one.

02 03 07 07 CMP Are you observing my steam pressure now?

02 03 07 11 CC Affirmative. And darkness occurs, Wally, about 51 25, 51 25.

02 03 07 22 CDR Then we are going to stop holding attitude, right?

02 03 07 24 CC Affirmative.

02 03 07 25 CDR Okay.

02 03 07 43 CMP Houston, Apollo 7. Are you reading my primary evaporator now?

02 03 07 48 CC Affirmative, 7.

02 03 07 52 CMP Roger. Did you note the evaporator outlet temperature overshoot all the way down to about 34.

02 03 08 01 CC We confirm, and we show it coming back up.

02 03 08 20 CC Okay. Apollo 7, we've completed 10 minutes in MIN deadband; you can come out of MIN deadband and go to the cheapest way possible for attitude hold.

02 03 08 31 CDR Roger. SCS.

02 03 09 20 CC Apollo 7, Houston.

02 03 09 27 CDR Houston, Apollo 7. Go ahead.

02 03 09 29 CC Roger. We feel that for all purposes your primary evaporator is working normally. You can discontinue attitude holding.

02 03 09 48 CDR Roger. All channels OFF.

02 03 09 49 CC Roger.

02 03 09 52 CMP Do you want us to go ahead and operate the glycol evaporator then, and see if we have a reoccurrence of the earlier trouble?

02 03 10 00 CC That's affirmative, and we will watch it, too.

02 03 10 03 CMP Thank you.

ASCENSION (REV 33)

02 03 20 16 CC Apollo 7, Houston through Ascension.

02 03 20 21 CDR Apollo 7. Roger. Loud and clear.

02 03 20 26 CC We're standing by.

02 03 20 31 CDR Houston, Apollo 7. Do you read?

02 03 20 33 CC I read you five-by. We're standing by.

02 03 20 37 CDR I took the camera apart and used some nose cream and cleaned up some of the inner gears, and it looks like it is going to do all right now.

02 03 20 48 CC Roger. Copy. And I have a flight plan update on that - the PAD for the star - sextant star count whenever you are ready to copy.

02 03 21 11 CDR Go ahead with your flight plan update, Jack.

02 03 21 13 CC Okay. GET SR will be 53 plus 36, roll will be 40, pitch will be 92. Delay that roll. Roll will be 4, pitch will be 92, yaw will be 359. GET of sunset minus 12 will be 54 plus 18, roll will be 184, pitch 97, yaw 359.

02 03 22 05 SC Roger. GET sunrise 53 plus 36, attitude 004 for roll, pitch 092, yaw 359. Sunrise minus 12 minutes will be 54 plus 18, roll 184, pitch 097, yaw 359.

02 03 22 28 CC Roger. That's correct.

02 03 22 31 CDR Okay. Houston, Apollo 7.

02 03 22 35 CC Go ahead, Wally.

02 03 22 37 CDR Roger. We still have reservations about the SPS engine. It looks good to us so far, but we don't have any data from you, though.

02 03 22 50 CC Okay. Stand by.

02 03 26 23 CC Apollo 7, Houston.

02 03 26 27 CDR Go ahead.

02 03 26 28 CC Wally, could you confirm your reservations about the SPS engine? Does that have to do with the GPI movement that you observed?

02 03 26 40 CDR Negative. We had a mission rule beforehand with the Flight Director that we would not go into the SMS (which is reserved) until we knew that we had a good SPS engine.

02 03 26 55 CC Okay. We copy.

02 03 26 57 CDR Roger. I'd like one more ...

02 03 27 00 CC Okay.

02 03 27 02 CDR At this point.

02 03 27 04 CC We understand. Stand by. We'll be - discuss that.

TANANARIVE (REV 33)

02 03 37 34 CC Apollo 7, Houston through Tananarive.

02 03 37 41 LMP Roger. We got a report ... angles for the realignment: minus .420, minus .175, plus .149. Are you ... Antares and Peacock, a triangle difference of four balls 1.

02 03 38 03 CC Roger. Donn, I've got a .175, a .149; I didn't catch the first one.

02 03 38 13 LMP The first one was a minus .420.

02 03 38 17 CC .420, a triangle difference of four balls 1, and say again the stars.



02 03 38 25 LMP Antares and Peacock; and on the angles, the first was a minus, second was a minus, the third was a plus.

02 03 38 34 CC Roger. Copy. And Walt, is Wally on the line?

02 03 39 01 CC Apollo 7, Houston.

02 03 39 05 CDR Schirra speaking. .

02 03 39 07 CC Roger. About the SPS problem: after discussion down here, our feeling is that the SPS is GO. However, we have a DAP service module RCS deorbit capability at the present time, and we are within 10 feet per second of an SCS service module RCS deorbit capability.



02 03 39 39 CDR Roger. That was our figuring, too. We'd like to hold that reserve as much as possible after the full turn. We'll get to ...

02 03 39 57 CC Wally, we aren't able to read you this time. We'll pick you up with that last transmission over Carnarvon.

02 03 40 06 CDR Roger.  
CARNARVON (REV 33)

02 03 51 45 CC Apollo 7, Houston through Carnarvon.

02 03 51 48 CDR Roger.

02 03 51 54 CDR Houston, could you read our DSKY then?

02 03 52 01 F Roger. Flight. No data yet.

02 03 52 03 CC Apollo 7, we don't have data yet.

02 03 52 07 CDR Roger. We have a display. It will take hold in a second. This is our gyro torquing angle.



02 03 52 15 CC Okay. Stand by.

02 03 52 29 IMP Houston. I did the fine align check and used Peacock and Rigel, star angle difference five balls, torquing angles plus 021 minus 049 plus 017. Over.

02 03 52 49 CC Okay. Copy that, Walt.

02 03 52 56 CDR He's back.

02 03 53 31 CC Apollo 7, Houston.

02 03 53 34 CDR Go ahead.

02 03 53 35 CC Can you give me a GET - an approximate GET that you did that fine align so that we can compute some gyro drift rates?

02 03 53 46 CDR Roger. The line was completed at about 51 40.

02 03 53 52 CC 51 40.

02 03 53 54 CDR 51. Fine align check.

02 03 53 59 CC Roger. Copy.

02 03 54 02 CMP Do you want the first one or the second one, Jack? He did two of them.

02 03 54 09 CC Stand by.

02 03 54 11 CMP The first one was about 51 40. I think that's the one you want for your drift check.

02 03 54 33 CC Okay, 7. The first one, 51 40, will be fine.

02 03 54 38 CDR Roger.

02 03 55 12 CC Apollo 7, Houston. Do you also have the time you did the fine align check so we can get that one, too?

02 03 55 19 CMP That was at 51 51.

02 03 55 22 CC Okay.

02 03 55 23 CDR Got that.

02 03 55 25 CC Roger. Copy that.

02 03 55 39 CC And - Apollo 7, Houston - we feel that on the basis of what Donn did on the daylight align test, that you can delete that P52 which comes at 55 plus 00 in the flight plan. Do you concur?

02 03 55 59 CDR Stand by.

02 03 56 02 CMP ... Roger. We concur.

02 03 56 06 CC Okay. You can delete it.

02 03 56 08 CDR Roger.

02 03 56 10 CMP Jack, if we happen to be in a favorable latitude, I might take another crack at it, but --

02 03 56 16 CC That's fine with us.

02 03 56 18 CMP Okay.

02 03 56 59 CDR Houston, Apollo 7.

02 03 57 01 CC Go ahead, 7.

02 03 57 03 CDR Roger. Can you talk about the SPS results now that you had observed on the ground?

02 03 57 09 CC Go ahead.

02 03 57 11 CDR Negative. What did you observe?

02 03 57 19 CC Okay. Stand by.

02 03 57 51 CC Apollo 7, Houston. On the - we relooked at all the strip charts on the SPS operation: ball valves, the temperatures, everything on the SPS appears normal.

02 03 58 07 CDR Very good. It seems that way here.

02 03 58 08 CC Okay. Real fine --

02 03 58 10 CDR ... information, I would like to have the number 3 burn before I give up the SM RCS budget.

02 03 58 19 CC Say again on the SPS number 3 burn.

02 03 58 24 CDR I would like to get the SPS number 3 burn in before I eat into the SM RCS deorbit budget.

02 03 58 34 CC Roger. We're going to look at that.

02 03 58 38 CDR Roger.

02 03 58 48 CC We are about 1 minute LOS Carnarvon; will pick you up in Guam in about 5 minutes.

02 03 58 57 CDR Roger.

GUAM (REV 33)

02 04 05 08 CC Apollo 7, Houston.

02 04 05 11 CDR Go ahead.

02 04 05 13 CC Roger. Read you five-by.

02 04 05 16 CMP Roger. We just saw a sunrise in the sextant.

02 04 05 25 CC Say again?

02 04 05 27 CDR Our navigator is excited about sunrise in the sextant.

02 04 05 32 CC Roger. If you decide to delete the P52 realign at 55 hours in the flight plan, you may go ahead with your G&N and SPS power down early, at your option.

02 04 06 03 CDR Houston, Apollo 7.

02 04 06 05 CC Go ahead.

02 04 06 06 CDR This will really break you up. We're having competition to see who can get the Exer-Genie first.

02 04 06 12 CC Roger. I say again that if you decide to delete that P52 realign at 55 plus 00, you can go ahead and power down the G&N and SPS early, at your option.

02 04 06 30 CDR Roger. Understand that. Thank you.

02 04 08 28 CDR Houston, Apollo 7.

02 04 08 31 CC Go ahead, 7.

02 04 08 32 SC Roger. We have the S-IVB in sight at this time through the sextant.

02 04 08 36 CC Roger.

02 04 08 38 LMP How far away is it now, Jack?

02 04 08 40 CC Stand by. I'll get it.

02 04 08 43 LMP Okay.

02 04 08 47 CC Stand by one; we'll get it up to you.

02 04 08 50 LMP Jack, by the way, the slot panel light that wasn't lighted —

02 04 08 53 CC Stand by.

02 04 08 57 CC Say again, 7.

02 04 08 58 LMP The slot panel light that was not lighted was the minus Z panel.

02 04 09 05 CC Roger. Copy.

02 04 09 12 LMP Minus Z, as in Zebra.

02 04 09 48 CC Apollo 7, Houston. The S-IVB is 312 miles away.

02 04 09 54 LMP Roger. We're seeing it loud and clear in here. I don't know if it will hold up throughout the entire day pass because when I get this orange background from the six liner pad, it might blot it out, but I'll keep you advised.

02 04 10 09 CC Okay. You are 1 minute LOS Guam; Hawaii in 7 minutes.

02 04 10 16 CDR Roger.

02 04 10 53 LMP Jack, do you have a map update for us?

02 04 10 56 CC Roger. We'll get you one. If I lose you here, we'll get it to you over Hawaii.

02 04 11 00 IMP Roger.

02 04 11 15 CC Apollo 7, ready with the update?

02 04 11 19 LMP Roger.

02 04 11 20 CC Okay. REV 33 GET of the node 52 plus 04 plus 32, longitude 139.2 degrees east, right ascension 05 plus 54.

HAWAII through GUAYMAS (REV 33)

02 04 18 15 CC Apollo 7, Houston through Hawaii.

02 04 18 18 CDR Hello, Houston. Roger. ... that S-IVB - I think what happened is the auto optics quit working, or it wasn't working right, and I saw it go out of the top of the sextant, and I never was able to recover it.

02 04 18 33 CC Roger. Copy.

02 04 18 37 CDR Up to the time it happened, it seemed to be working pretty well. I had done a few marks,

and it appeared to be pulling it in a little closer to the center although not as well as it had done on the previous run.

02 04 18 48 CC Okay. We copy that.

02 04 18 51 CDR I think it deserves a pretty good plus so far.

02 04 19 01 CC Apollo 7, I didn't copy the last part.

02 04 19 03 CDR Roger. This is CDR. I say it deserves a pretty good plus so far.

02 04 19 07 CC Okay. Real fine.

02 04 19 14 CDR Don't want the boys in Boston to get too excited yet.

02 04 19 18 CC Roger.

02 04 29 10 SC Why did the top of the band ...?

02 04 31 00 CDR ... Magazine Q, frame 20, Baja California.

02 04 31 05 CC Roger. Copy.

02 04 31 09 CC Wally, coming over Texas in about 5 or 6 - 3 or 4 minutes, we'd like you to turn your S-band volume up, and we're going to be transmitting S-band only.

02 04 31 24 CDR Roger. At 21 east coast, west coast, Baja California, and we'll shoot Guaymas shortly.

02 04 31 31 CC Okay.

02 04 31 38 CMP Give us a call when you want the volume up, Jack, 'cause --

02 04 31 42 CC Okay. You can turn S-band volume up now; we are just about to acquire Texas.

02 04 31 52 CDR Correction on Guaymas that ... and upper third of Baja California.

02 04 31 58 CC Roger.

02 04 32 29 CDR The Hasselblad is working fine with a combination of oral grease removal and nose cream.

TEXAS through ANTIGUA (REV 33)

02 04 32 37 CC Roger. Copy that.

02 04 33 44 CC Apollo 7, Houston. Transmitting S-band for backup check.

02 04 33 49 CDR Roger. We read you loud and clear.

02 04 33 51 CC You are five-by.

02 04 33 52 CDR Roger.

02 04 33 54 CDR Mexico looks very nice today; a lot of strato cu. It looks like it would be good weather for the Olympics.

02 04 34 03 CC Roger. Copy that.

HAWAII through GUAYMAS (REV 34)

02 04 35 43 CDR Frame 26, magazine Q was a straight shot down at the coast of Mexico just south of Monterrey.

02 04 35 52 CC Roger. Copy.

02 04 35 54 CDR Looks like a nice day to be on the beach.

02 04 35 56 CC It sure does.

02 04 35 59 CDR What's your temperature down there today?

02 04 36 03 CC It's pretty nice down here; we had fog in the morning.

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02 04 36 07 CDR Roger. Magazine Q, frame 24, eastern coast of Mexico.

02 04 36 32 CDR Hello, Houston. This is your captain speaking as we fly across the Gulf of Mexico where we are clear to the Yucatan Peninsula. The west coast of the Yucatan looks loud and clear, and we will give you a report on clouds on arrival.

02 04 36 44 CC Okay. And we are going back to VHF in just a few minutes here so you can turn the S-band volume down in about 2 minutes.

02 04 36 54 CDR Roger.

02 04 38 02 CDR Twenty-five and 26 west coast and Yucatan Peninsula west coast on VHF. We are crossing ... now.

02 04 38 07 CC Roger. Copy.

02 04 38 57 CDR We are referring to magazine Q for Queen.

02 04 39 00 CC Roger.

02 04 45 07 CMP Frame 75, a river in northeastern South America.

02 04 45 18 CC Roger. Copy.

02 04 45 23 CMP Sounds like you got some nice scenic music ...

02 04 45 26 CC Roger.

02 04 45 40 CC Apollo - Apollo 7, Houston. Could we get you to switch the BIOMED switch to the CDR?

02 04 45 48 CMP I think that's a portion of "Fools Rush in Where Angels Fear to Tread."

02 04 45 56 CC Roger. We copy your switch position.

02 04 45 59 CMP Roger. Are you playing music, Jack?

02 04 46 02 CC Negative.

02 04 46 04 CMP We hear a song, "Fools Rush in Where Angels Fear to Tread." That's why the remark. We have some real good music up here.

02 04 46 13 CC It isn't me.

02 04 46 15 CMP Okay. How's the readout this time?

02 04 46 35 CMP It's a Houston radio station; just heard the call. It's FM, probably.

02 04 46 50 CMP You might call around town and find out who played "Fools Rush in Where Angels Fear to Tread" at about 52 hours and 26 minutes - 25 minutes.

02 04 47 17 CC Roger. We copy.  
ASCENSION (REV 34)

02 04 57 54 CC Apollo 7, Houston. Standing by, Ascension.

02 04 57 58 CDR Roger. We read you loud and clear.

02 04 58 01 CC Roger.

02 05 04 19 CT Gaido, CAP COMM.

02 05 12 11 CC Apollo 7, Houston. I have a flight plan update.

02 05 12 34 CMP Apollo 7. Go ahead with your update.

02 05 12 38 CC Roger. The time, 54 plus 40; H<sub>2</sub> heaters ON; at 55 plus 00, H<sub>2</sub> fuel cell purge.

02 05 13 04 CMP Roger. That's 54 plus 40 and hydrogen purge at 55 00.

02 05 13 11 CC Roger. At 57 plus 50, O<sub>2</sub> - oxygen fuel cell purge.

02 05 13 26 CMP Roger. O<sub>2</sub> purge at 57 50.

02 05 13 31 CC Roger. End of update.

GUAM (REV 34)

02 05 38 41 CC Apollo 7, Houston. Standing by Guam.

02 05 38 47 CDR Roger. Loud and clear.

02 05 38 48 CC Roger.

02 05 40 12 CDR Houston, Apollo 7.

02 05 40 34 CDR Houston, Apollo 7.

02 05 41 02 CC Apollo 7, Houston. Were you calling?

02 05 41 05 CDR Roger. ... I had a butterscotch pudding bag failure. ... it failed as I was rolling it up to stow it.

02 05 41 21 CC Say again, Wally.

02 05 41 25 CDR I had a food bag failure that failed when I was rolling it up empty to stow it.

02 05 41 31 CC Roger. Understand.

02 05 41 35 CDR No problem. I can still see 50 stars at this time at this attitude. There is a kind of a light square forming in the middle of the States ...

02 05 41 53 CC Roger. And you say the count is 50?

02 05 41 59 CDR More than 50; more than 50.

02 05 42 01 CC Greater than 50. Roger.

02 05 42 03 CDR ... plus 4 minutes.

02 05 42 48 CDR Okay. This time a light is beginning to creep into the sextant - into the telescope all around

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the edge, and there is a big, broad band of light across the center and a blob down at the bottom; and this light is slowly increasing in intensity, and I suspect that in a few minutes it's gonna blot out the whole field of view.

02 05 43 07 CC

Roger.

02 05 44 51 CDR

Roger. At 44, I see ten stars. I can see Orion's belt and the four corner stars and Sirius and, oh, a handful of others scattered around. There's about 10-12 stars.

02 05 45 43 CC

Roger.

02 05 45 44 CC

Thirty seconds LOS.

02 05 45 46 CDR

Roger. We are with you.

HAWAII through TEXAS (REV 34)

02 05 54 29 CC

Apollo 7, Houston. Request onboard batt C voltage at your convenience.

02 05 54 37 LMP

Roger.

02 05 54 48 LMP

Roger. I've got battery C, 37 volts.

02 05 54 52 CC

Roger. Thirty-seven.

02 05 54 55 LMP

Has anybody taken a good look at the total battery load we have on batt A, batt D? I know we didn't get back as much as we expected to on battery A yesterday.

02 05 55 11 CC

That's affirmative, Walt. We are looking at it.

02 05 55 23 LMP

Hey.

02 05 55 26 LMP

Hey, Ron.

02 05 55 28 CC

Go.

02 05 55 29 IMP I'm in favor - I guess I'm leaning toward another battery charge, if necessary, a little further down the pike.

02 05 55 42 CC I see what you are saying. You think that we may require another battery charge later on sometimes.

02 05 59 06 IMP Houston, Apollo 7.

02 05 59 08 CC Houston. Go.

02 05 59 11 IMP Roger. We are standing by our second tissue bag at 54 hours into the flight.

02 05 59 19 CC Roger. Your second what?

02 05 59 23 IMP Our second bag of tissue.

02 05 59 31 IMP Incidentally, you might note that the ORDEAL storage box - after the ORDEAL is out and closed up again - makes a nice little locker for stuffing things into. The little hole that's open - you can stuff it in; then later dump it into the empty tissue box.

02 05 59 50 CC Roger.

02 06 05 40 IMP Houston, Apollo 7. Frame 34 on magazine Q, clouds approaching the western coast of Mexico.

02 06 05 53 CC Say again, Walt. Opposite omni.

02 06 06 02 IMP Approaching west coast of Mexico, frame 34, magazine Q, cloud formation.

02 06 07 34 IMP Frame 30 Baja California; frame 3i will be of LaPaz.

02 06 07 40 CC Apollo 7, Houston. Say again.

02 06 07 45 IMP Frame 30 Baja California, frame 31 LaPaz.  
02 06 07 51 CC Roger.  
02 06 09 03 LMP Frame 32, Puerto Vallarta.  
02 06 09 06 CC Roger.  
02 06 09 09 SC ...

## HAWAII through TEXAS (REV 35)

02 06 12 18 CC Apollo 7, Houston. Thirty seconds LOS. Tananarive at 46 minutes.

## TANANARIVE (REV 35)

02 06 46 41 CC Apollo - Apollo 7, Houston. Tananarive standing by.  
02 06 46 46 IMP Roger. We've logged another food bag failure, and we powered down at 54 35 for a drifting site configuration.  
02 06 47 06 CC Say again time, Walt.  
02 06 47 08 IMP At 54 35, we powered down to the drifting site configuration, and I have another food bag failure to report.  
02 06 47 17 CC Roger. How did the second one fail?  
02 06 47 20 IMP I had the second one, and it was A3, AOB for the IMP - the chocolate pudding. But the failure occurred at the spout where it comes out at the eating end, and it seems to have given away near the ...  
02 06 48 00 IMP Did you receive, Houston?

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02 06 48 06 CC Walt, I got part of that, but I couldn't get it all. Chocolate pudding bag failed, but I'm not sure how, yet.

02 06 48 12 LMP Okay. It failed at the eating end. It was not one of the external seams, but it made it impossible to eat it.

02 06 48 22 CC Roger. I understand now.

02 06 48 24 LMP Chocolate pudding A3, AOB.

02 06 48 31 CC Roger.

02 06 48 35 LMP That last pass along the western coast of Mexico, we got several nice pictures of the Las Cruces harbor and Acapulco, Mexico.

02 06 48 48 CC Roger.

02 06 49 29 CDR Houston, Apollo 7.

02 06 49 31 CC Houston. Go.

02 06 49 33 CDR Roger. I'd like to give a report on the way we're eating. We're eating, I'd say, as much as we can get down, which is about two meals a day, so far.

02 06 49 48 CC Roger.

02 06 49 50 CDR Donn Eisele may change the pace. He eats about two and a half meals a day.

02 06 49 57 CC Roger. Donn is a big eater.

02 06 50 01 CDR Say again?

02 06 50 03 CC Roger. Donn is the big eater.

02 06 50 06 CDR That's a fact.

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02 06 50 10 CDR We've been on the Exer-Genie now as much as 30 minutes at a time, and we've doubled the workload on it, and there's not much more we can do. If we're not hungry, we don't eat. I think we're all feeling pretty chipper; there's no discomfort up here. My cold is improved considerably.

02 06 50 36 CC Roger. That's good.

02 06 50 50 CDR A subject that we are concerned about is the chlorination of the drinking water. We're drinking about as much as we can. I'd say that we've drunk enough water to lower the quantity sufficiently to have a chlorine check.

02 06 51 11 CC Say again, Wally.

02 06 51 45 CC Apollo 7, Houston. Say again about the chlorine and potable water.

02 06 51 53 CDR The advisability of adding chlorine on schedule to the potable water.

02 06 54 34 CC Apollo 7, Houston. Thirty seconds to LOS; Mercury at 09.

MERCURY (REV 35)

02 07 10 07 CC Apollo 7, Houston through Mercury.

02 07 10 11 CDR Roger. Do you read that?

02 07 10 16 CC Roger. You're a lot better this time. Can you say again your question about the potable water and chlorination?

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○ 02 07 10 23 CDR Yes, Ron. We - adding chlorine to the water quantity that has not decreased since we've been taken off practically. And if the taste of the chlorine has not bothered us yet, but we feel we haven't taken enough water out of there to warrant adding chlorine on a 24-hour basis.

02 07 10 48 CC Okay. Understand your question now, and we'll check into it.

02 07 10 54 CDR Roger.

02 07 12 05 CC Apollo 7, Houston. Opposite omni.

02 07 12 08 CDR Roger.

02 07 12 21 CDR This is Apollo 7.

○ 02 07 12 24 CC Houston. Go.

02 07 12 27 IMP At approximately 20 minutes ago, the prime rate evaporator ran into the same kind of problem it had earlier in the flight. The steam pressure went all the way down peg low, and they could not increase it by going to MANUAL and the INCREASE switch. I reserviced it for 2 minutes and operated manually for another couple of minutes and finally went back to AUTO. And it's been running fine for the last 20 minutes - maybe longer - I guess more like about 30 minutes ago.

○ 02 07 13 07 CC Roger. We copy.

02 07 13 13 IMP Apparently, it's a case of the evaporator drying out instead of the evaporator being frozen.

02 07 13 22 CC Roger.

02 07 13 25 IMP I couldn't get too many details about the 2TV-1 test, but it seems to me it could be similar to what happened in the chamber a couple of times. And there might be something we could bring up to maybe get it fixed before the next flight.

02 07 13 42 CC Roger. Concur.

02 07 15 07 CC Apollo 7, Houston.

02 07 15 11 CDR Go.

02 07 15 12 CC Roger. We would like to confirm that you have completed the H<sub>2</sub> fuel cell purge.

02 07 15 19 CDR That's affirmative. Completed at approximately 4 minutes past the hour.

02 07 15 25 CC Roger. Thank you.

HAWAII (REV 35)

02 07 28 40 CC Apollo 7, Houston. Standing by Hawaii.

02 07 28 46 SC ...

02 07 28 59 CC Apollo 7, Houston. You were real weak. Say again.

02 07 29 03 CDR Log ten clicks H<sub>2</sub>O IMP; six clicks CMP; 15 clicks CDR, and two aspirins CDR.

02 07 29 17 CC Roger. Copy that.

02 07 32 00 CC 7 from Houston.

02 07 32 02 CDR Go ahead.

02 07 32 03 CC You might be interested to know that the  
Oilers blanked Boston 16 to 0.

02 07 32 11 CDR Very good. They must have received our picture  
by now.

02 07 32 15 CC They're still in the running.  
HUNTSVILLE (REV 35)

02 07 34 56 CT ... two wheel lock. Valid range.

02 07 36 43 CT Huntsville cannot acquire. Two-way signal too  
low.

02 07 38 56 CT Huntsville LOS.

02 07 39 10 CC Apollo 7, Houston. One minute LOS. Tananarive  
at 20 minutes.

02 07 39 20 CDR Thank you.

02 07 40 24 CT Huntsville AOS.

02 07 40 45 CT Huntsville LOS.  
TANANARIVE (REV 36)

02 08 23 10 CC Apollo 7, Houston. Tananarive standing by.

02 08 23 14 LMP Received your message Apollo 7. Roger.

02 08 23 18 CC Roger.

02 08 23 22 LMP Hey, Ron. Can you give me a readout on my  
hydrogen manifold pressures if I turn my  
valve ...

02 08 23 36 CC Not this pass, Walt. We have no data here.  
We should be able to pick that up over  
Mercury, though.

02 08 23 43 LMP Thank you.

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MERCURY (REV 36)

02 08 45 00 CC Apollo 7, Houston, Mercury.  
02 08 45 07 CDR Roger. Read you loud and clear. How me?  
02 08 45 09 CC Roger. Loud and clear. We have data; we can  
check your O<sub>2</sub> manifold pressures.  
02 08 45 35 CDR Delay this cut, okay?  
02 08 45 47 CDR Houston, Apollo 7. Do you read?  
02 08 45 49 CC Houston. Say again.  
02 08 45 51 CDR Roger. We'll have to delay this test.  
02 08 45 55 CC Roger.  
02 08 47 46 CC Apollo 7, Houston.  
02 08 47 51 CDR Go ahead.  
02 08 47 52 CC Roger. You're GO on chlorinating. Just draw  
a little bit out before you chlorinate.  
02 08 48 02 CDR Roger.  
02 08 48 47 CDR Houston, frames 45 and 46 of magazine Q were  
shot 1 minute ago.  
02 08 48 54 CC Roger.  
02 08 49 02 CC Apollo 7, Houston. Opposite omni.  
02 08 51 20 CC Apollo 7, Houston. One minute LOS. S-band  
volume up at 57 plus 03.  
02 08 51 28 CDR 57 03.

HAWAII (REV 36)

02 09 02 41 CC Apollo 7, Houston at Hawaii.  
02 09 02 53 CDR Roger, Houston. Loud and clear.  
02 09 02 56 CC Roger. Same.

02 09 03 22 CC 7, Houston. I have block data to pass up, and also, we are standing by for the O<sub>2</sub> thing if you want to do then.

02 09 04 07 CDR Okay. Ready to go on the block.

02 09 04 10 CC Roger. 039 slant 3 Bravo plus 212 plus 1345 061 plus 17 plus 53 4900, 040 dash Alfa Charlie plus 007 minus 0199 062 plus 07 plus 40 4365, 041 dash Alfa Charlie plus 134 minus 0229 063 plus 43 plus 46 4168, 042 dash 2 Alfa plus 229 minus 0264 065 plus 19 plus 43 4128, 043 dash 1 Charlie plus 206 minus 0549 066 plus 47 plus 22 4129, 044 minus 1 Alfa plus 257 minus 0649 068 plus 20 plus 59 41 44. Over.

02 09 06 43 CDR Roger. Readback follows: 039 slash 3 Bravo plus 212 plus 1345 061 17 53 4900, 040 slash Alfa Charlie plus 007 minus 0199 062 07 40 4365, 041 Alfa Charlie plus 134 minus 0229 063 43 46 4168, 042 —

02 09 07 38 CC Apollo 7, Houston.

02 09 07 39 CDR Roger. I switched omni. Where did I leave it?

02 09 07 42 CC Roger. Start again with REV 42.

02 09 07 48 CDR Roger. 042 2 Alfa plus 229 minus 0264 065 19 43 4128, 043 1 Charlie plus 206 minus 0549 066 47 22 4129, 044 1 Alfa plus 257 minus 0649 068 20 59 41 44.

02 09 07 21 CC Apollo 7, Houston. Readback correct.

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02 09 07 23 CDR Are you ready to take care of our O<sub>2</sub> reg?  
02 09 07 26 CC Roger. Go.  
HUNTSVILLE (REV 36)  
02 09 08 32 CDR Roger. Will you give us a readout now ...  
02 09 08 37 CC Say again.  
02 09 08 39 CDR Will you give us a readout now, and then we will  
switch regs?  
02 09 08 42 CC Roger. 105.  
02 09 08 45 CDR Roger. 105.  
02 09 08 57 CDR Okay. Do you get a readout?  
02 09 09 00 CC 102.  
02 09 09 08 CDR Roger. UCF's redundant component check is GO.  
02 09 09 13 CC Roger.  
02 09 09 39 CC Apollo 7, better turn S-band volume down.  
02 09 10 32 CT Huntsville. Two wheel on down range.  
02 09 11 56 CC Apollo 7, Houston. One minute LOS. Tananarive  
at 58.  
TANANARIVE (REV 36)  
02 09 59 51 CC Apollo 7, Houston. Tananarive standing by.  
02 09 59 55 CDR Roger.  
02 09 59 56 CC Roger. Loud and clear.  
02 10 00 26 CDR This is Apollo, and I'm chlorinating the water at  
this time.  
02 10 00 31 CC Roger. That's short pass; 1 minute to LOS.  
02 10 00 35 CDR Roger.

## MERCURY (REV 37)

02 10 19 52 CC Apollo 7, Houston, Mercury. Standing by.

02 10 19 57 CDR Roger. Loud and clear.

02 10 19 58 CC Roger. The same.

02 10 20 26 LMP Houston, Apollo 7.

02 10 20 28 CC Houston. Go.

02 10 20 31 LMP Roger. For your flight plan status, we've accomplished everything scheduled on the flight plan. We're having a little bit of trouble getting all of the pictures; I think we've got a camera that isn't working too good.

02 10 20 49 CC Roger. Is this the Hasse'blad that's not working too good?

02 10 20 55 LMP Roger. We've got it fixed, so it's ticking along now.

02 10 20 59 CC Roger.

02 10 21 02 LMP We only took two rolls of the S0368 on the 16mm: one for the separation and turnaround maneuver and one on the final phase of the rendezvous. We are going to be using some of it out the window if it seems appropriate.

02 10 21 20 CC Roger.

## HAWAII (REV 37)

02 10 37 45 CC Apollo 7, Houston, Hawaii.

02 10 38 17 CC Apollo 7, Houston.

02 10 38 42 CC Apollo 7, Houston.

02 10 39 01 CC Apollo 7, Houston.

02 10 39 34 CC Apollo 7, Houston.

02 10 39 38 LMP Apollo 7, loud and clear.

02 10 39 41 CC Roger. Your number 2 flow proportioning valve has been doing a good job this last rev, and we recommend returning to ECS radiator flow control number 1 by switching to number 1 then back to AUTO.

02 10 40 01 LMP What's wrong with letting number 2 do the job?

02 10 40 05 CC Roger. We just prefer to stay on one as it does a little better.

02 10 40 12 CDR You mean because it's a smaller number, or what?

02 10 40 17 LMP Okay. We'll return to one for you. We were wondering when you would spot that.

02 10 40 21 CC Roger. We checked it with Mercury the last time around.

02 10 40 25 CDR We're kinda afflicted today, Ron. Bear with us.

02 10 40 28 CC Roger.

02 10 40 39 CC Walt, on the battery charging, we're not considering any additional battery charging of A until we observe what happens when we charge battery B.

02 10 40 52 LMP Roger. I understand, but we probably have reason to expect battery B to go up to about 35 or 36 amp hours too, which shouldn't leave us in very good shape, I don't believe.

02 10 41 06 CC Roger. I understand your concern. Also, Walt, we need some command module heater temps when you get a chance. They're five and six, A through D, on your system status. No hurry.

02 10 41 52 LMP Houston, Apollo 7.

02 10 41 54 CC Go.

02 10 41 59 CC Apollo 7, Houston. Go.

02 10 42 02 LMP Roger. About, oh, it must have been a little over an hour and half ago, we had another anomaly like on the first night when Donn was awake; all of a sudden the DC bus 1 went to zero on the readout and A - DC bus light ...

02 10 42 35 CC Walt, say again after AC bus light; went through a keyhole there.

02 10 42 40 LMP Well, something is taking the inverter off of AC bus 1, and we're hitting the RESET, but they're right back on again ...

02 10 42 58 CC Roger. It looks like the same thing that happened to Donn, then.

02 10 43 01 CDR I'd say that it is.  
REDSTONE (REV 37)

02 10 53 26 CC Apollo 7, Houston. Switch omni.

02 10 53 34 LMP Go ahead.

02 10 53 39 CC Apollo 7, Houston. Could you confirm that when you had the AC fail, was it an AC bus or an AC overload light?

02 10 53 49 LMP ... bus light or overload.

02 10 53 55 CC Say again, Walt.

02 10 53 57 LMP ...

02 10 54 05 CC You're awful weak, Walt. Say again.

02 10 54 27 CC Apollo 7, Houston.

02 10 54 32 LMP Houston, Apollo 7. Did you read my last communication?

02 10 54 35 CC That's negative. Say again.

02 10 54 38 LMP Roger. I had AC bus 1 light on, no overload. The inverter was automatically disconnected, and I'm wondering if there isn't some possibility of having trouble with that inverter putting out an overvoltage?

02 10 54 56 CC Roger. We're working on this. Can you associate this with anything else that was going on at that time?

02 10 55 02 LMP That's negative.

02 10 55 07 CC And it wasn't associated then with the flow proportioning valve switchover?

02 10 55 14 LMP Not associated with anything that I can think of.

02 10 55 18 CC Roger. You're not giving us much help.

02 10 55 26 CDR This one is going to be a witch hunt, Ron.

02 10 55 29 CC I think so.

02 10 55 31 CDR This is one of those things that sort of happened. It's also the reason why we're going to keep somebody on watch all the time.

02 10 55 41 LMP Yes, I don't think there's anything you can do about it, Ron. I'm just reporting that we have had it happen twice.

02 10 55 47 CC Okay. We're scratching our brains down here to see if maybe we could come up with something.

02 10 55 54 CDR It'll give you something to do during passes anyway.

02 10 55 57 CC Roger.

02 10 59 05 CC Apollo 7, Houston. One minute LOS; Ascension at 19.

02 10 59 11 CDR Roger.  
ASCENSION (REV 38)

02 11 19 39 CC Apollo 7, Houston, Ascension. Standing by.

02 11 22 29 CC Apollo 7, Houston, Ascension. Standing by.

02 11 22 33 CDR Roger. Loud and clear.

02 11 22 36 CC Roger. Same.

02 11 24 04 LMP Houston, Apollo 7. Can you give me an update for AMP, please?

02 11 24 09 CC Roger. Stand by.

02 11 24 23 CC Apollo 7, Houston. Ready to copy.

02 11 24 27 LMP Okay. Ready to copy. Go.

02 11 24 29 CC Roger. REV 38, GET NODE 59 plus 32 plus 03, longitude 24.7 east, right ascension 05 plus 44.

02 11 24 51 LMP Say the longitude again, please.

02 11 24 54 CC Longitude 24.7 east.

02 11 25 01 LMP Was that 24.7?

02 11 25 03 CC Roger. 24.7.

02 11 25 08 LMP Thank you.

GUAM (REV 38)

02 12 01 48 CC Apollo 7, Houston, Guam. Standing by.

02 12 05 11 CC Apollo 7, Houston. One minute LOS; Redstone at 26.

02 12 05 19 LMP Roger. We'd like to give the results of the rendezvous radar self-test and confer on the use of the rendezvous radar power and heater switch. Would you pass that up to us, Ron?

02 12 05 36 CC Say again, Walt.

02 12 05 38 LMP We have to know the exact position of the rendezvous radar heater and power switch so we can use the rendezvous radar self-test. We don't have that on board with us.

02 12 05 53 CC Roger. Awful hard to understand. Something about a power switch, and I'll guess which one. I'll find out.

02 12 05 58 LMP Rendezvous radar power switch, and it's a pre-positioned switch, the other end of it ...

02 12 06 07 CC Roger.

REDSTONE (REV 38)

02 12 26 22 CC Apollo 7, Houston through the Redstone.

02 12 26 49 CC Apollo 7, Houston, Redstone.

02 12 26 52 CDR Roger. Read you. How me?

02 12 26 54 CC Roger. A little weak, but clear.

02 12 26 57 IMP Roger. Do you have the data on the radar transponder test?

02 12 27 02 CC Affirmative. Are you ready to copy?

02 12 27 10 CDR Go ahead.

02 12 27 11 CC Roger. The rendezvous transponder power switch: you put it to HEATER for 1 minute and then to POWER for the self-test. By the way, you leave it 24 minutes in HEATER if you are going to really operate it. Systems test left hand, the TRANSPONDER, right hand to Alfa. Indicator should be 1 to 5 volts. Systems test right hand to Bravo. Indicator 2, plus or minus 1 volt. Systems test right hand to Charlie. Disregard the indicator. Systems test right hand to Dog. Indicator should be 0 to 4.5 volts. Over.

02 12 28 27 CDR I'm getting very broken; we'll have to wait for Ascension, I think, to get a good separator.

02 12 28 37 CC Roger.

02 12 28 40 CDR Do you read, Apollo 7?

02 12 28 42 CC Apollo 7, Houston. Roger. Read you now.

02 12 28 46 CDR Roger. You might try it again. You were broken the first time, and I couldn't read you at all.

○

02 12 28 51 CC Roger. Rendezvous transponder power switch goes to HEATER for 1 minute, then to POWER.

02 12 30 39 CC Apollo 7, Houston. Is the COMM any better now?

02 12 30 44 CDR Roger. Sounds clear now. You want to try to read that off again?

02 12 30 47 CC Roger. The radar transponder power switch goes to HEATER for 1 minute, then to POWER. Systems test left hand to TRANSPONDER, right hand to Alfa. Your indicator, 1 to 5 volts. 7, Houston. You copy so far?

02 12 31 31 CDR Let's try to pick you up at Ascension.

02 12 31 36 CC Roger. We'll try Ascension then.

02 12 31 39 CDR Roger.

○

02 12 34 21 CC Apollo 7, Houston. One minute LOS; Ascension at 52.

ASCENSION (REV 39)

02 12 52 59 CC Apollo 7, Houston.

02 12 53 05 CDR Houston, Apollo 7.

02 12 53 08 CC Roger. I can continue with that transponder check now if you want.

02 12 53 12 CDR I think I have the data for you if you're ready to copy.

02 12 53 17 CC Roger. Ready.

02 12 53 19 CDR It's the heater tubes. Alfa 3.2, Bravo 1.8, Charlie .45, Delta 0.

○

02 12 53 32 CC Roger. I'll read back: 3.2, 1.8, 0.44, and 0.

02 12 53 41 CDR That is correct. DELTA-V to tab over to .1 at the most.

02 12 53 47 CC Roger.

02 12 54 02 CC Apollo 7, Houston. Be advised of warmup time for the real test on that thing is 24 minutes.

02 12 54 11 CDR Roger. And we'll be using 1 minute, right?

02 12 54 14 CC Say again.

02 12 54 21 CDR Apollo 7. Roger.

02 12 54 25 CDR Houston, Apollo 7.

02 12 54 27 CC Houston. Go.

02 12 54 29 CDR We finally proved our point on the chlorine; it tastes horrible right now.

02 12 54 37 CDR It's 2 and 1/2 hours after injection.

02 12 54 42 CC Roger. We understand.

02 12 54 45 CDR We've been asking about this for a long time, and now we will just have to wait or consider using the survival kit water if it's necessary.

02 12 55 00 CC Roger.

02 12 58 14 CC Apollo 7, Houston.

02 12 58 17 CDR Apollo 7. Go.

02 12 58 19 CC Roger. We see no BIOMED downlink on the IMP.

02 12 58 34 CDR I wanted to fly; now I got to go get it up.

02 12 58 42 CC Say again, Wally.

02 12 58 46 CDR Roger. We've got the cable all hooked up.

02 12 58 50 CC Roger.

02 12 58 55 CDR We're getting down to keeping only one man on watch at a time, and that's going to answer a lot. He's not sleeping, just milling around, staring, and housekeeping.

02 12 59 16 CDR ...

02 12 59 22 CC Say again.

02 12 59 24 CDR You want LMP now?

02 12 59 28 LMP How are you reading my heart?

02 12 59 34 CC Stand by.

02 12 59 39 LMP Is my heart coming in five-by-five?

02 12 59 50 CC Roger, Walt. We have it now. Thank you.

02 13 00 47 CC Apollo 7, Houston. Thirty seconds LOS; Mercury at 28.

02 13 00 54 CDR Roger.

MERCURY (REV 39)

02 13 30 00 CC Apollo 7, Houston. Acquisition Mercury.

02 13 30 03 CDR Houston, Apollo 7. Do you read?

02 13 30 11 CC Apollo 7, Houston. Go.

02 13 30 15 CDR Roger. We had a traumatic experience up here that kept us up half the night. ... one of the reasons is we had two regs shut down and power outage which came back immediately afterwards. And we had a ground ... right after that which didn't last too long and now a read-out on the caution and warning panel. Over.

( ) 02 13 30 45 CC Apollo 7, Houston. I will call you again in about 30 seconds. The signal is very poor. All copied is something about caution and warning panel.

02 13 31 32 CC Apollo 7, Houston. You are unreadable right now.

02 13 31 33 CDR Houston, Apollo 7. Say again.  
GUAM (REV 39)

02 13 34 00 CC Apollo 7, Houston. How do you read?

02 13 34 03 CDR Okay. Did you read my last? ...

02 13 34 15 CC Apollo 7, Houston. I read you about strength one and virtually unreadable.

02 13 34 23 CDR Roger. Do you read me now?

02 13 34 25 CC Roger. That is much better. Go.

02 13 34 30 CDR Apollo 7, say again.

02 13 34 32 CC Apollo 7, Houston. At acquisition Mercury, you gave me a transmission. All I copied was something about caution and warning panel. Would you say again?

02 13 34 48 CDR Houston, this is Apollo 7. Just prior to crossing the Red Sea, we lost AC bus 1 and AC bus 2. ...

02 13 35 20 CC Apollo 7, Houston. Understand just after crossing the Red Sea, you lost AC bus 1 and AC bus 2. You have obtained RESET. I am going to wait over Guam and go with this

( )

again. I am missing too much of the transmission.

02 13 35 38	CDR	Roger. We're up here standing by.
02 13 36 20	CC	Apollo 7, Houston. How do you read?
02 13 36 22	CDR	Roger. Loud and clear.
02 13 36 25	CC	Okay. I am sorry to have you repeat this again. But I did not get the full message there. I got something after passing the Red Sea. You had AC bus 1 and AC bus 2 fail. You did get RESET on both buses. Is that correct?
02 13 36 44	CDR	That is correct, approximately 61 hours and 14 minutes. About 9 minutes earlier, we had a master alarm, but no caution and warning lights indicated.
02 13 36 54	CC	You had no caution and warning lights.
02 13 36 59	CDR	That was 9 minutes earlier. If you recall, we had a bit of ghosts earlier in the mission. We also had an AC 1 bus failure when we lost a compressor twice, and it came back up again. Apparently, we've got a trend here that I'd like to have more information about.
02 13 37 20	CC	Roger. Understand. You think it is a ghost. Now - just to make sure I have it correct. You do have both AC buses working normally now.

02 13 37 29 CDR That is correct. I am not sure kind - what kind of ghosts we have, but we have had master alarms and no indication as to the cause.

02 13 37 38 CC Thank you.

02 13 37 43 LMP Hey, Bill. We got one more thing that may or may not be significant, but after I reset the first master alarm with no caution or warning light, I checked the currents on all the fuel cells, and we were averaging a little over 20 amps per fuel cell, and now we are back to about 15. And, at first, I attributed that to a cycling load. I don't know; it could possibly have been AC loads. I don't know.

02 13 38 14 CC Roger. Understand. Immediately after RESET, you monitored the fuel cell currents at 20.0 amps, and they are now reading 15.0.

02 13 38 23 LMP That is a negative. After the master alarm, with no caution or warning lights, at 61 09 is when I noticed the fuel cell currents. The other two caution and warning alarms when the bus failed were 61 14. Over.

02 13 38 43 CC Roger.

02 13 38 46 CDR If we sound puzzled now, we were not then.

02 13 38 54 CC Roger.

02 13 39 04 CC Apollo 7, Houston. We are getting a tape dump here at Guam, and we will be taking a look

at it and be trying to give you a call at Redstone on this.

02 13 39 15 CDR Okay. There is not much we can do right now, but I would like to find out what we have left if this continues.

02 13 39 21 CC Roger.

02 13 39 23 CDR All I know is that there is a lot ... coins in the water.

02 13 39 27 CC Understand.

02 13 41 18 CC Apollo 7, Houston. One minute till LOS Guam; Redstone at 01.

02 13 41 25 CDR Roger.

02 13 41 31 CC And - Apollo 7, Houston - I would like to confirm a canister change at around the 58-hour point.

02 13 41 43 CDR That's affirmative.

02 13 41 44 CC Thank you.

REDSTONE (REV 39)

02 14 01 25 CC Apollo 7, Houston.

02 14 01 29 CMP Roger, Houston. Go ahead.

02 14 01 31 CC Roger. I was a bit optimistic. It'll take a little longer to look at those tapes, but we did get a dump over Guam, and we'll be giving you our analysis of the situation as soon as we get it. In the meantime, I'd like to go back over my notes and make sure

that I have the story correct. Okay. The way I have it: at 61 plus 09, you got a master alarm light with no caution and warning lights? You reset the master alarm. Okay.

02 14 02 18 CC At that time, fuel cell current was averaging 20.0 each. At 61 plus 14, you got an AC 1 and an AC 2 fail. You reset both AC 1 and AC 2 successfully. At the time that you were talking to me, about 61 plus 30, the fuel cells were averaging 15 amps, one-five amps. That is the story as I have it copied.

02 14 03 09 CC Apollo 7, Houston. Did you read?

02 14 03 15 CMP Houston, Apollo 7. You read?

02 14 03 18 CC Roger. Apollo 7, Houston. How do you read me?

02 14 03 22 CMP Read you fine now. How me?

02 14 03 24 CC I read you about four-by-four. Did you get my transmission there?

02 14 03 29 CMP Affirmative. The details are correct. The time was 61 plus 05 for the master alarm and 61 plus 14 for the bus fail.

02 14 03 40 CC Apollo 7, Houston. Copied the correction, 61 plus 05 for the master alarm.

02 14 03 48 CMP And the fuel cell loading may or may not be significant. That was the third AC bus 1 failure we've had and the first AC bus 2 failure,

and my best onboard analysis is to track it down to a transient overvoltage, but guiding onto both buses, which seems kind of difficult.

02 14 04 11 CC Roger.

02 14 04 14 CMP Did you read?

02 14 04 46 CMP Houston, Apollo 7. Did you read?

02 14 04 47 CC Roger. Go.

02 14 04 51 CMP Did you read my last transmission, Bill?

02 14 04 53 CC Roger. Understand. You have - this is the third AC 1 failure, the first AC 2 failure that you've experienced. You are doubtful - you are in question as to how a transient overvoltage can throw both AC's off line. Is that your question?

02 14 05 20 CMP That's affirmative.

02 14 05 22 CC Okay. We're looking at it. We will be looking at that and trying to give you a complete story as soon as we can put it together.

02 14 05 29 CMP Okay. And confirm we have a good tape running now.

02 14 05 33 CC Stand by.

02 14 05 53 CC Apollo 7, Houston. We are rewinding the tape now. The tape will be yours at LOS.

02 14 06 02 CMP Roger. Thank you.

02 14 06 05 CC LOS in about 3 and 1/2 minutes.

02 14 09 05 CC Apollo 7, Houston. Coming up on LOS Redstone; Ascension at 27.

02 14 09 12 CMP Roger. We'll be standing by.

02 14 09 14 CC And the tape recorder is yours now.

02 14 09 18 SC Understand?

02 14 09 21 CDR Houston, this is Wally. Houston, this is Wally.

02 14 09 27 CC Go.

02 14 09 29 CDR Roger. You might just check into our configuration on the last minute variance on inverter safety wiring.

02 14 09 39 CC Roger. Check into the inverter safety wiring.

02 14 09 42 CDR There's a new change in the glitches that they had at the plant.

02 14 09 49 CC Roger.

02 14 09 52 CMP I think Wally's referring to the change where they disconnected the overload transit.

ASCENSION (REV 40)

02 14 28 12 CC Apollo 7, Houston.

02 14 29 32 CC Apollo 7, Houston.

02 14 29 35 CMP Roger. Houston, Apollo 7. Go.

02 14 29 37 CC Roger. AOS Ascension, and we're still studying the problem.

02 14 29 42 CMP Okay.

02 14 29 48 LMP No sweat here right now. Everything's normal.

02 14 29 50 CC Roger. We just finished the playback and are still looking at it.

02 14 29 56 CMP Good show. Walt and Wally are sacking out, so I'll be minding the store in the meantime.

02 14 30 02 CC Okay, Donn.

02 14 34 02 CC Apollo 7, Houston. One minute LOS Ascension;  
Mercury at 04.  
GUAM (REV 40)

02 15 10 50 CC Apollo 7, Houston.

02 15 10 53 CMP Roger. Houston, Apollo 7.

02 15 10 55 CC Roger. Acquisition Guam.

02 15 10 58 CMP Roger.

02 15 14 33 CC Apollo 7, Houston. About 1 minute 30 seconds  
LOS Guam. Redstone at 36, and we'd like to  
confirm BIOMED switch center.

02 15 14 47 CMP Roger. Stand by. Switch at center.

02 15 14 57 CC Roger. Understand. It is at center.  
REDSTONE (REV 40)

02 15 36 33 CC Apollo 7, Houston. Acquisition Redstone.

02 15 38 10 CC Apollo 7, Houston.

02 15 38 18 CMP Houston, Apollo 7. You're very weak. Go.

02 15 38 21 CC Roger. We detected a CMC power-up over Guam.  
Was that a valid reading?

02 15 38 29 CMP That is correct. I powered it up and went state  
vector integrate up and put it back down.

02 15 38 34 CC Okay. Thank you.

02 15 43 45 CC Apollo 7, Houston. One minute to LOS Redstone;  
Canary 07.

02 15 43 54 CMP Roger.

## CANARY (REV 41)

02 16 07 09 CC Apollo 7, Houston. Acquisition Canary.  
02 16 07 14 CMP Roger. Houston, Apollo 7.  
02 16 07 17 CC Roger. Just for your information, we have about  
a 6 and 1/2 minute pass here, and then it's  
going to be about 1 hour before we pick you  
up, and that'll be over the Redstone.

## REDSTONE (REV 41)

02 17 11 11 CC Apollo 7, Houston.  
02 17 11 27 CC Apollo 7, Houston.  
02 17 11 44 CC Apollo 7, Houston.  
02 17 11 49 CMP Roger. Houston, Apollo 7. Go.  
02 17 12 03 CC Apollo 7, Houston. How do you read me?  
02 17 12 46 CC Apollo 7, Houston. How do you read?  
02 17 13 05 CC Apollo 7, Houston. How do you read?  
02 17 13 47 CC Apollo 7, Houston. Switch omni, please.  
02 17 14 00 CC Apollo 7, Houston. How do you read?  
02 17 14 06 CMP Read you five-by, Bill.  
02 17 14 08 CC Okay. Good. I wanted confirmation because I'm  
going to read off a fairly lengthy procedure.  
We have a procedure developed here to assist in  
locating the AC bus problem.  
02 17 14 25 CMP Okay. Fine. Stand by, and I'll get something to  
write it down on.  
02 17 14 32 CMP Go ahead with your procedure.

02 17 14 33 CC Okay. You can probably do it as I call it out.  
First, which AC bus is powering the following:  
cabin fan?

02 17 14 51 CMP Roger. Cabin fans are OFF.

02 17 14 54 CC Roger. Cabin fans are OFF. Next, glycol pump.

02 17 15 04 CMP Stand by. Glycol pump on AC1.

02 17 15 09 CC Roger. Glycol pump on AC1. Next, suit compressors.

02 17 15 17 CMP Suit compressors on AC1.

02 17 15 22 CC Roger. AC1. Do not change configuration.

02 17 15 32 CMP Roger.

02 17 15 33 CC Okay. Number two. We would like for you to check the six CRYO fan circuit breakers on panel 226 and report if any are popped, but do not push them in.

02 17 15 50 CMP Stand by.

02 17 16 04 CMP Roger. All the CRYO breakers are in.

02 17 16 08 CC Roger. Understand all of them are in. Thank you very much.

02 17 16 17 CC Opposite omni, please.

02 17 16 20 CMP Roger. Stand by.

02 17 18 57 CC Apollo 7, Houston. We would like you to switch omni for maximum signal strength. We'd like to get some TM before we have LOS here at Redstone, which is going to occur in about 45 seconds.

## ANTIGUA (REV 42)

02 17 31 09 CC Apollo 7, Houston. Acquisition Antigua.  
02 17 32 19 CC Apollo 7, Houston. Acquisition Antigua.  
02 17 32 23 CMP Roger, Bill. Loud and clear.  
02 17 32 25 CC Roger.  
02 17 35 25 CC Apollo 7, Houston. One minute until LOS Antigua.  
Acquisition Canary at 40. I will have a flight  
plan update at that time.  
02 17 35 37 CMP Roger, Bill. See you in about 4 minutes, then.  
02 17 35 42 CC Roger. Four or 5 minutes; that is correct.  
02 17 35 43 CMP Okay.

## CANARY (REV 42)

02 17 40 55 CC Apollo 7, Houston.  
02 17 41 00 CMP Houston, Apollo 7.  
02 17 41 02 CC Roger. I have the flight plan update.  
02 17 41 19 CMP Let's proceed with the update, Bill.  
02 17 41 21 CC Roger. At 66 plus 15, delete the radar trans-  
ponder self-test.  
02 17 41 35 CMP Roger. Understand. Delete the test at 66 plus  
15.  
02 17 41 39 CC Roger. At 69 00, add unstow and set up TV camera.  
02 17 41 59 CMP Roger. Understand. Set up the TV.  
02 17 42 01 CC Roger. At 69 plus 50, delete the reference to  
H<sub>2</sub> heaters ON.  
02 17 42 16 CMP Roger. No heaters ON. Understand.  
02 17 42 19 CC Roger. At 70 hours, 70 plus 00, add fuel cell  
O<sub>2</sub> purge.

02 17 42 35      CMP      Roger. Fuel cell O<sub>2</sub> purge at 70 hours.

02 17 42 38      CC      Roger. And that is 71 plus 41, TV ON.

02 17 42 51      CMP      Roger. You want the TV ON at the same time when we're doing the rendezvous radar test. Is that correct?

02 17 42 59      CC      No, I think the rendezvous radar test is - stand by one. You're right. Wait just a minute. Let me get this cleared up.

02 17 43 13      CMP      Okay.

02 17 43 14      CC      Meantime, would you switch omni, please?

00 17 43 17      CMP      Roger.

02 17 43 28      CC      Apollo 7, Houston. Would you confirm opposite omni? We are having a little trouble with TM.

02 17 43 34      CMP      Roger. I went from C to A. I'll try Bravo.

02 17 43 38      CC      Roger. And that is the correct time for TV ON.

02 17 43 46      CMP      Roger. TV ON at 41 plus 41. Is that right?

02 17 43 50      CC      Affirmative.

02 17 44 00      CC      That is the end of the flight plan update.

02 17 44 03      CMP      Roger. If you don't want the TV on until 71 hours and 40 minutes, I think we will hold off unstowing it. The thing is in the way when it is up, and we would rather not be running into it all the time.

02 17 44 20      CC      I didn't hear it.

02 17 44 22      CMP      Understand you want the TV running at the same time we're doing the - or will be doing the radar test.

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02 17 44 30 CC That's affirmative. That's the confirmation I get here.

02 17 44 35 CMP Okay.

02 17 44 42 CC Apollo 7, Houston. Opposite omni, please.

02 17 44 47 CMP Roger.

02 17 45 05 CC And - Apollo 7, Houston - for your information, I am pretty sure this TV ON time is tied into the Texas acquisition time.

02 17 45 16 CMP Yes, that figures.

02 17 45 34 CC Apollo 7, Houston. Would you confirm or report the position of your PMP power switch?

02 17 45 43 CMP Stand by.

02 17 45 47 CMP PMP is in NORMAL; it's UP.

02 17 45 50 CC NORMAL.

02 17 45 55 CC Would you go to AUX, please?

02 17 45 58 CMP Roger.

02 17 47 45 CC Apollo 7, Houston. One minute LOS Canary; Carnarvon at 18.

02 17 47 53 CMP Roger.  
CARNARVON (REV 42)

02 18 16 26 CC Apollo 7, Houston.

02 18 18 26 CC Apollo 7, Houston.

02 18 19 25 CC Apollo 7, Houston.

02 18 19 28 CMP Roger. Houston, Apollo 7. Go.

02 18 19 30 CC Roger. Acquisition Carnarvon, and I'd like for you to check a couple of things for us,



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02 18 51 35 CC No. I don't think that did any harm.

02 18 51 39 CMP Are you receiving things on the tape dump.

02 18 51 43 CC Did you go to up-telemetry COMMAND RESET?

02 18 51 56 CC Apollo 7, Houston. Did you go to up-telemetry  
COMMAND RESET?

02 18 52 21 CC Apollo 7, Houston.

02 18 52 56 CC Apollo 7, Houston. If you read, go to S-band  
OFF to tape.

02 18 53 23 CC Apollo 7, Houston. About 30 seconds to LOS;  
Antigua at 03.

ANTIGUA through BERMUDA (REV 43)

02 19 04 29 CC Apollo 7, Houston.

02 19 04 33 CMP Houston, 7.

02 19 04 35 CC Roger. Acquisition Antigua.

02 19 04 38 CMP Roger.

02 19 04 40 CC I would like to get a confirmation on something.  
Did you go to COMMAND RESET when you used the  
tape?

02 19 04 48 CMP That's affirmative.

02 19 04 51 CC Roger. Ground advises do not use DSE as  
voice log. We have lost TM subcarrier, and  
we can't get data while you are dumping.

02 19 05 09 CC We're working on it; we're trying to fix it.

02 19 05 14 CMP Roger. Say again.

02 19 05 19 CC We're working a lost TM subcarrier problem.

02 19 05 26 CMP Roger.

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02 19 05 28 CC Also, we would like S-band off AUX to TAPE.

02 19 05 33 CMP Roger. It's in TAPE.

02 19 05 35 CC Thank you.

02 19 11 16 CC Apollo 7, Houston.

02 19 11 20 CMP Houston, Apollo 7.

02 19 11 21 CC Roger. Apollo 7, Houston. We would like for you to stay in the present COMM configuration until further advised. We are having some difficulties on that TM.

02 19 11 32 CMP Roger. Understand.  
CANARY (REV 43)

02 19 16 20 CC Apollo 7, Houston. Acquisition Canary.

02 19 16 28 CMP Roger. Houston.

02 19 16 30 CC And let's see, we'll be at Carnarvon about 50. I will have a state vector for you then.

02 19 16 42 CMP Roger. Understand.

02 19 18 25 CC Apollo 7, Houston. Opposite omni.

02 19 18 30 CMP Roger. Stand by.

02 19 18 33 CC Roger.

02 19 22 23 CC Apollo 7, Houston. One minute LOS Canary; Carnarvon at 50. Would like POO at Carnarvon acquisition.

02 19 22 35 CMP Roger. We'll have it.

02 19 22 36 CC Thank you.  
CARNARVON (REV 43)

02 19 50 45 CC Apollo 7, Houston.

02 19 50 48 CMP Go ahead, Houston.

02 19 50 50 CC Roger. Confirm POO and ACCEPT.

02 19 50 54 CMP Roger. I'm in POO. I'll go to ACCEPT. I would like for you to take a look at this program alarm 1105 that we have been getting off and on through the flight. I got it again here about 5 minutes ago.

02 19 51 07 CC Roger. That would've been about 26.

02 19 51 17 CMP I'm in ACCEPT now.

02 19 51 18 CC Roger.

02 19 51 26 CC Have a NAV check to go with the CSM NAV vector that it is coming up, if you can get ready to copy that. And I also have an update for the rendezvous radar tests.

02 19 51 41 CMP Roger.

02 19 51 52 CMP Go ahead with your NAV check.

02 19 51 54 JC Roger. NAV check: 071 11 0000 minus 2914 plus 14170 1593.

02 19 52 30 CMP Roger. 071 11 0000 minus 2914 plus 14170 1593.

02 19 52 41 CC Readback is correct. When you are ready, I can give you the rendezvous radar test update.

02 19 52 53 CMP Go ahead with that update.

02 19 52 58 CC Roger. Starting with T align 70 plus 58 159 degrees, 055 017 71 plus 39 71 plus 43.

02 19 53 35 CMP Roger. Understand. 70 plus 58 159 055 017 71 plus 39 71 plus 43.

02 19 53 47 CC Readback is correct. Donn, I have an analysis to this AC problem. I'll go over it and see what you have - what your comments are.

02 19 54 03 CMP Okay. Go ahead.

02 19 54 06 CC Okay. Point 1, we have spent considerable time going through the data here. And we have noticed that the AC bus glitches are associated with the cycling OFF of O<sub>2</sub> CRYO fans. This is causing the AC bus to surge to overvoltage. It seems as though this is only a problem at low power loads on the AC bus, but it has been noticed repeatedly.

02 19 54 51 CMP Okay. That - sounds pretty logical.

02 19 54 55 CC Point 2; recommendation O<sub>2</sub> fans tank 1 OFF, do that. This will insure AC 1 stays on line. If our analysis of the problem is correct.

02 19 55 20 CMP Roger. What about AC 2. We have that one, also.

02 19 55 23 CC Roger. You'll have that one ON. We will periodically switch O<sub>2</sub> fans tank 1 back to the ON position. At the same time, O<sub>2</sub> fans tank 2, OFF. This will insure at least one AC bus is protected at all times from this surging to overvoltage.

02 19 55 49 CMP Roger. I see. If we get fired up again, do you think we will still have this problem?

02 19 55 55 CC I'm not sure. It seems as though it is not nearly as much a problem when you're powered

up, it is only when you're in a low power condition. The voltage control is more sensitive or tends to overshoot or something there.

02 19 56 14 CMP Okay. I'll turn tank 1 off for now.

02 19 56 17 CC Roger. Understand.

02 19 56 26 CMP We're probably going to get some stratification when we've proved out on this stratification test.

02 19 56 33 CC Roger. We have taken that into consideration.

02 19 56 37 CMP Okay.

02 19 56 44 CC Apollo 7, Houston. Opposite omni.

02 19 56 48 CMP Roger.

02 19 57 35 CC Apollo 7, Houston. We are having a little trouble getting the CSM NAV vector up. If we don't do it, I'll read it up to you over Honeysuckle, that'll be about 67 plus 59 and will require S-band volume up.

02 19 57 53 CSM Roger.

02 19 59 25 CC Apollo 7, Houston.

02 19 59 28 CSM Go ahead, Houston.

02 19 59 32 CC Roger. I'm going to have to read you the P27 update if you have the PAD out there.

HONEYSUCKLE (REV 43)

02 20 00 33 CC Apollo 7, Houston. Do you read?

02 20 01 22 CC Apollo 7, Houston.

02 20 01 40 CC Apollo 7, Houston. We will not have to give you a P27 update. We were able to uplink it.

02 20 02 08 CC Apollo 7, Houston. Do you read?  
02 20 03 36 CC Apollo 7, Houston.  
TEXAS through BERMUDA (REV 43)  
02 20 35 09 CC Apollo 7, Houston through Texas.  
02 20 35 13 CMP Roger. Houston, Apollo 7.  
02 20 35 16 CC Roger. Good morning.  
02 20 35 18 CMP And how are you, sir?  
02 20 35 20 CC Very good.  
02 20 35 22 CMP Oh, very well.  
02 20 36 21 CC Apollo 7, Houston.  
02 20 36 23 CMP Go.  
02 20 36 24 CC Donn, I've got your block data number 8 for  
you. Also, could you switch the BIOMED switch  
to CDR, and could you confirm that you have  
turned the CRYO fans tank 1 OFF?  
02 20 36 42 CMP Roger. CRYO fan tank 1 is OFF, and Wally's  
still asleep, but he doesn't have his BIOMED  
hooked up.  
02 20 36 51 CC Okay. Copy that.  
02 20 36 53 CMP Will get it on him when they get up.  
02 20 36 55 CC Okay. Real fine.  
TEXAS through BERMUDA (REV 44)  
02 20 37 02 CMP You can go with your block update.  
02 20 37 04 CC Okay. This is block data number 8: 045 dash  
1 Alfa plus 311 minus 0638 069 plus 57 plus 34  
4259, 046 dash 1 Alfa plus 313 minus 0638 071

plus 33 plus 1 Alfa 4405, 047 dash 1 Alfa plus 272 minus 0649 073 plus 08 plus 47 4593, 048 dash 4 Alfa plus 297 minus 1650 075 plus 52 plus 37 4202, 049 dash 4 Bravo plus 318 minus 1650 077 plus 28 plus 29 4321, 050 dash 3 Alfa plus 265 plus 1371 078 plus 47 plus 51 4161.

02 20 39 11 CMP

Say, Jack, I'm going to have to ask you to run those by again a little slower, and it might do to stop now and then so I can butt in and tell you if I'm missing any.

02 20 39 20 CC

Okay. Donn, I guess I'm a little faster than you are this morning. Okay. Did you get - where do you want me to start? At the beginning?

02 20 39 31 CMP

Yes, I think you might as well.

02 20 39 34 CC

Okay. Going back. 045 dash 1 Alfa plus 311 minus 0638 069 plus 57 plus 34 4259, 046 dash 1 Alfa plus 311 minus 0638 071 plus 33 plus 18 4405, 047 dash 1 Alfa plus 272 minus 0649 073 plus 08 plus 47 4593, 048 dash 4 Alfa plus 297 minus 1650 075 plus 52 plus 37 4202, 049 dash 4 Bravo plus 318 minus 1650 077 plus 28 plus 29 4321, 050 dash 3 Alfa plus 265 plus 1371 078 plus 47 plus 51, 4161 end.

02 20 42 23 CMP

Okay. Readback follows: 045 dash 1 Alfa plus 311 minus 0638 069 57 34 4259, 046 1 Alfa plus 311 minus 0638 071 33 18 4405, 047 1 Alfa plus

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272 minus 06 49 073 08 47 4593, 048 dash 4 Alfa  
plus 297 minus 1650 0755237 4202, 049 dash 0  
Bravo plus 318 minus 1650 077 28 29 4321, 050  
dash 3 Alfa plus 265 plus 1371 078 47 51 4161.

02 20 43 36 CC Roger.

02 20 43 47 CC Donn, could you read the latitude in 046 dash  
1 Alfa.

02 20 43 54 CMP Roger. I've got plus 311.

02 20 43 57 CC Should be plus 313.

02 20 43 59 CMP Roger. 313. Thank you.

02 20 44 02 CC Okay. That's got it.

02 20 45 13 CMP Jack?

02 20 45 18 CMP Houston, Apollo 7.

02 20 45 20 CC Apollo 7, Houston. Go ahead.

02 20 45 22 CMP Roger. Just checked PPO<sub>2</sub> and got 235 milli-  
meters.

02 20 45 29 CC I didn't copy that, Donn. Say again.

02 20 45 31 CMP Okay. Partial pressure O<sub>2</sub> on the cabin is  
235 mm.

02 20 45 36 CC Roger. Copied that, and Donn, we're through  
at the computer now. You can go to BLOCK on  
your UP-TEL switch. Also, you have a GO for  
62 dash 1.

02 20 45 47 CMP Roger. Understand. GO for 62 dash 1.  
CANARY (REV 44)

02 20 50 47 CC Apollo 7, Houston through the Canaries.  
Standing by.

02 20 50 51      CMP      Roger. We are powering up the SCS for the G&N at this time.

02 20 50 57      CC      Roger. Copy.

02 20 54 49      CMP      Houston, Apollo 7.

02 20 54 51      CC      Go ahead, 7.

02 20 54 52      CMP      Roger. We took frames 44 through 47 on magazine O Oscar at 68 hours and 54 minutes. This was a picture of the weather formations around the Canaries.

02 20 55 07      CMP      Okay. Roger. Copy that, and Donn, when you get a chance, we would like you to switch your flow proportioning valve to one then back to AUTO again.

02 20 55 20      CMP      Okay. Done.

02 20 55 25      CC      Thank you.

02 20 57 36      CC      Apollo 7, Houston. You're about 30 seconds LOS Canary. You sure look good going over the hill. We'll pick you up at Carnarvon in about 28 minutes.

CARNARVON (REV 44)

02 21 25 40      CC      Apollo 7, Houston through Carnarvon.

02 21 25 43      LMP      Roger, Houston. Good morning, Jack.

02 21 25 45      CC      Good morning, Walt. How are you this morning?

02 21 25 48      LMP      Fine.

02 21 25 52      CC      We'll be standing by.

02 21 26 06 IMP Hey, Jack. I have a question on our low quad. We had one quad yesterday that was reading 47 percent. Are we going to want that quad propellant pressure around the 43-percent level, or are we going to switch to secondary propellants open loop at 43? Over.

02 21 26 26 CC Okay. Stand by. I'll get G&C on that here.

02 21 27 55 CC Apollo 7, Houston.

02 21 27 59 IMP Go ahead, Houston.

02 21 28 01 CC Walt, you are about 25 pounds away from the point at which you should switch, which is about 6 percent; so you are quite a ways away, so there is no need to hurry on that now, and we'll give you, when you start getting close, a gage reading of which you should switch.

02 21 28 20 IMP Roger. And will we switch quad by quad?

02 21 28 23 CC Affirmative. Quad by quad.

02 21 28 26 IMP Okay. We need a map update, please.

02 21 28 30 CC Say again. Oh, a map update? Stand by.

02 21 29 35 CC Apollo 7, Houston. We'll be talking to you. We'll pick up Honeysuckle in about 4 minutes. We'd like you to turn up your S-band.

02 21 29 44 IMP Roger.

02 21 29 47 CC And I have your map update, Walt.

02 21 29 52 IMP Go.

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( 02 21 29 53 CC This is for REV 43. The GET of the node is at 68 plus 29 plus 00. Longitude of the node, 122.7 degrees west, a right ascension of 05 plus 33.

02 21 30 14 LMP Roger.

02 21 32 41 CC I just -  
HONEYSUCKLE (REV 44)

02 21 35 52 CC Apollo 7, Houston through Honeysuckle.

02 21 36 07 CC Apollo 7, Houston through Honeysuckle.

02 21 36 12 LMP Roger. This is Apollo 7. Can you read?

02 21 36 15 CC I read you five-by now. We need to switch the BIOMED switch to CDR.

02 21 36 22 LMP Roger. Won't do any good; he's not plugged up.

( 02 21 36 25 CC Okay. When he gets plugged up, would you do it?

02 21 36 32 LMP Okay. I get a high-pitched squeal on S-band. How about you?

02 21 36 38 CC Roger. Walt, we've commanded backup voice there because we've lost the FM, and we're going on FM now. We got the voice on the FM subcarrier.

02 21 36 50 CMP Okay. What's the status on our tape recorder?

02 21 36 54 CC Stand by.

02 21 37 53 CC Apollo 7, Houston.

02 21 38 09 CC Apollo 7, Houston.

02 21 38 11 LMP Go ahead, Houston.

( 02 21 38 12 CC Roger. Walt, when you want to use the tape recorder, go to low bit rate and RECORD. When you

are ready - when you are through recording and want us to dump it, let us know, and we will interrupt real-time data and dump it.

02 21 38 32 LMP Is this a change for our normal operating procedures for the flight?

02 21 38 43 LMP I am not reading you any more.

02 21 38 45 CC Okay. Walt, what we have lost is the FM downlink. We are on the FM downlink now, which means we are time-sharing DSE with real-time downlink.

02 21 39 01 LMP Roger. Have we lost that permanently?

02 21 39 06 CC It hasn't been determined yet. We are going to do a little bit of checking here.

02 21 39 13 LMP Okay. Well, I'll take the tape recorder back and - on 69 hours and 39 minutes.

02 21 39 21 CC Okay.

02 21 39 24 LMP You are going to still keep the bookkeeping on it?

02 21 39 27 CC Okay.

02 21 41 57 CC Apollo 7, Houston. LOS Honeysuckle; pick you up at Guaymas.

GUAYMAS through ANTIGUA (REV 44)

02 22 05 04 CC Apollo 7, Houston through Guaymas.

02 22 05 28 LMP Apollo 7. Reading five-by-five.

02 22 05 30 CC Roger. Five-by. Walt, we want to delete these COMM tests that we were going to do over this stateside pass here or over Canaries.

02 22 05 42 LMP Roger. Understand.

02 22 06 07 LMP Houston, Apollo 7.

02 22 06 23 LMP Hello, Houston, Apollo 7.

02 22 06 25 CC Go ahead, 7.

02 22 06 27 CDR Roger. We have a computer problem. We are unable to get a MARK in ...

02 22 06 43 CDR And as a result of this, we are not aligned at this point and possibly will not be able to support the WSMR test.

02 22 06 55 CC If I copy you, Wally, understand you have had a problem in aligning the platform, and you may not be able to support the WSMR test. Is that Charlie?

02 22 07 04 CDR That is Charlie. The problem apparently is the MARK button.

02 22 07 10 CC A problem with the MARK button. Roger. Understand.

02 22 07 14 CDR Yes, we hope that's what it is, Jack. It was attempted in the P51, and in step 4, we have a flashing 51 and calling for a MARK. We pushed the MARK button repeatedly, and it will not go on to the next display. Apparently, it's not accepting the MARK, or else the MARK button is filled; I'm not sure which. I did check - I did check a bit in flagwood 74, the L53 flag, and that was set when the 51 was flashing. I also did a CNC self-check that turned out okay; and we did a halting 53 - by that I mean we

just ran through the program without actually maneuvering. It seemed to work fine. We did punch the ENTER button, and the computer progressed through the program.

02 22 08 00 CC Okay. Roger, Apollo 7. Looks like we're reading your DSKY now. You're still on Program 41 with HOUN 70?

02 22 08 09 LMP Negative. We've got POO in there right now. Do you want me to call it back up?

02 22 08 12 CC Okay. Yes, I guess we missed a lockon data.

02 22 08 17 LMP Okay.

02 22 08 46 LMP Houston, Apollo 7. On our pre-mod processor here, we had a failed normal pre-mod processor ...

02 22 09 01 CC Roger. Understand. Copy that you had a failed pre-mod processor, and you're going to run the rest of the flight in AUXILIARY.

02 22 09 09 LMP That's negative! We are operating in AUXILIARY now per your request during the evening; and I'm trying to find out - are we going to have to operate there the rest of the flight?

02 22 09 22 CC Walt, we're working on a troubleshooting procedure on this. I'm sorry I missed part of your transmission.

02 22 09 32 CC We'll be troubleshooting this, and we will get you a reading on it shortly.

02 22 09 37 IMP Hey, Jack. When I got up this morning, we had already been told by ground to go to FMP AUXILIARY earlier in the evening, and I'm wondering is there trouble with the NORMAL; and if not, we'd like to get back so we can operate the tape recorder the way we started.

02 22 10 15 CC Just a minute, Walt.

02 22 12 01 CC Apollo 7, Houston.

02 22 12 03 IMP Go, Houston.

02 22 12 05 CC Roger. Walt, we had a problem last night with the NORMAL FM where we lost voice telemetry subcarrier of the NORMAL FM, and we're devising a troubleshooting procedure now. We'd like for you to stay in this present configuration until we've gotten that procedure up to you. You can use the tape recorder as you want as long as you are in low bit rate.

GUAYMAS through ANTIGUA (REV 45)

02 22 12 32 IMP Okay. I picked up the tape recorder when it was already played out. I rewound it; it's standing by for a dump now in case he has something on it. Do you want a dump?

02 22 12 50 CC Walt, did you have very much of a voice transcription on that tape recorder?

02 22 12 55 IMP I don't know, but the whole tape has been recorded so it's going to take you about 8 minutes for a complete dump.

02 22 13 05 CC Okay. Stand by.

02 22 14 27 CC Apollo 7, Houston.

02 22 14 30 SC Roger. Go.

02 22 14 31 CC On the tape recorder, there's nothing there that we feel we'd like to dump it for, unless you have made some voice transmissions in there that we don't know about.

02 22 14 46 SC The only thing we might lose that I can think of would be some of the film log, and I think we can cover that another way.

02 22 14 54 CC Okay. We won't dump it then.

02 22 14 58 SC Okay. We'll go ahead and only data run when we want to record something. That way we will limit the amount of time required for dumping.

00 22 15 06 CC Roger.

02 22 17 43 CC Apollo 7, Houston.

02 22 18 01 CC Apollo 7, Houston.

02 22 18 16 CC Apollo 7, Houston.

02 22 19 04 CC Apollo 7, Houston.

02 22 20 34 CC Apollo 7, Houston.

02 22 20 43 CC Apollo 7, Houston.

02 22 21 06 CC Apollo 7, Houston.

02 22 25 27 CC Apollo 7, Houston.

02 22 25 32 CMP Roger. Houston, Apollo 7. How do you read? Over.

02 22 25 34 CC I read five-by. We've got a few things to try, Donn, to check the MARK button.

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02 22 25 44      CMP      Roger. Say again, Jack?

02 22 25 46      CC      We have something we would like you to do to verify the operation of the MARK button. While in program 00, we would like to have you press the MARK button and verify whether you get a PROGRAM ALARM.

02 22 26 04      CMP      Okay. Here goes. I do not get a PROGRAM ALARM.

02 22 26 11      CC      Okay. If you don't get a PROGRAM ALARM now, press the MARK REJECT button while in POO there and see whether you get a PROGRAM ALARM.

02 22 26 21      CMP      Roger. Pressing MARK REJECT, I get no PROGRAM ALARM.

02 22 26 24      CC      Roger. Copy that. During this next night pass, we would like you to try P51 again. If you don't get any response from the MARK button, then try P53 and P54.

02 22 26 50      CDR      Jack, do you have any ...

02 22 27 00      CC      Roger. Copy. Stand by.

02 22 27 02      CDR      Roger. We used quite a bit of fuel on 53. We'd like to have an update on our fuel status. This is the reason I'm concerned about it, and I sure do ... TV ... problem.

02 22 27 30      CC      Okay. Wally, stand by. We are going to discuss that here.

02 22 27 35      CDR      Okay. Realize that if we do 53 ... and use the COAS for burns.

02 22 27 40      CC      Roger. We understand.

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02 22 27 42 CDR Pretty busy getting set up here. Guess you want to watch our close up ... on the TV.

02 22 27 50 CC Okay. We will discuss that, Wally. We will be back to you. In the meantime, Walt, we would like to have you read off the positions of your S-band NORMAL and S-band AUX switches here so we could start the troubleshooting procedure on this FM.

02 22 28 08 LMP S-band NORMAL switches are in VOICE, PCM, and RANGING; S-band AUX is still in TAPE; and I guess I may as well turn the tape switch off. I still have power switches SCE NORMAL, PMP on OFF. Over.

02 22 28 28 CC Roger. We copy.

02 22 28 33 CC What are the position of your transponders, Walt?

02 22 28 36 LMP I'm in SECONDARY of the transponder and the power amplifier in HIGH.

02 22 28 42 CC Okay. Copy. We'll be back - -

02 22 28 46 LMP Hey, Jack - -

02 22 28 47 CC Go ahead.

02 22 28 48 LMP ... tape now; why don't I turn the ... tape switch off.

02 22 28 59 CC We'd rather have you just leave it on, Walt.

02 22 29 02 LMP Okay.

CANARY (REV 45)

02 22 30 27 CC Hello, Apollo 7, Houston.

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( ) 02 22 30 30 SC Roger, Houston. Go.

02 22 30 32 CC Okay. If we can't get through the P51 and 52 using the MARK button, go ahead and use the COAS and get 53 and 54 for the IMU alignment.

02 22 30 44 CDR Roger. Tom, my concern is, are you willing to expend the service module RCS fuel for the radar transponder test, or are you asking me to be willing to?

02 22 30 56 CC Well, the whole thing, Wally - we want to get the platform aligned first and see what we've got. We'll talk about the rest of it down the line over Carnarvon.

⊖ 02 22 31 08 CDR I think we've got a problem, and I go along with getting the IMU alignment, too.

02 22 31 12 CC We'll try the COAS one time. It's worth it one time in case that we can't get the optics going.

02 22 31 20 CDR Okay.

02 22 31 21 CC All right.

02 22 21 22 IMP Will you give us a total number of pounds of RCS propellants remaining? I can put it in my ...

02 22 31 28 CC Yes. Okay, Walt. We're going to give you this over Carnarvon.

02 22 31 32 IMP Standing by.

( ) 02 22 31 33 CC Roger.

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02 22 32 05 CC Apollo 7, Houston. Your total usable RCS fuel now is 750 pounds.

02 22 32 14 IMP That is 750 pounds; goes on my chart at 70 hours into the flight. I want total number of fuel because I think, on my chart here, the unusable is already taken off the bottom.

02 22 32 30 CC Okay. The 750 is usable.

02 22 32 35 IMP Well, would you take a look at your copy of my onboard chart and give me a number that I can stick on that?

02 22 32 43 CC Okay. Walt, we'll pass that over to you over Tananarive. We're about to lose you here. Tananarive at 13 minutes.

02 22 32 50 IMP Okay. Thank you.  
TANANARIVE (REV 45)

02 22 45 29 CC Apollo 7, Houston.

02 22 45 36 IMP Go ahead, Houston.

02 22 45 37 CC Roger. Walt, the reading that you should be having on your chart for RCS fuel is 808 pounds.

02 22 45 49 IMP Roger. 808, 58 plus the 750 you gave me.

02 22 45 54 CC Roger.

02 22 45 56 CC Apollo 7, Houston.

02 22 45 58 IMP Go ahead, Tom.

02 22 46 00 CC Okay. I want to check how this alignment is going out. We've already worked out with Steve Cops here a real slick little way of doing 53

02 22 47 54 CDR Okay. Do you want to go through and read that one again?

02 22 47 57 CC We've got 4 minutes. Do you want me to read it over?

02 22 48 07 CDR Do you read, Tom?

02 22 48 12 CC Apollo 7, say again.

02 22 48 15 CMP Yes. Tom, will you go through that again a little bit slower? I was a little bit behind in copying down the procedures. I'm ready to go again.

02 22 48 22 CC Okay. We go through step 1 and step 2 of P53, and you can use the coarse align option if you want to, but we acquire the stars within the telescope.

02 22 48 38 CMP Roger.

02 22 48 39 CC Okay. Once we get the NAV star in the telescope, then go ahead and get it into the sextant.

02 22 48 45 CMP Okay. I see, then we ...

02 22 48 48 CC Okay. When you get it into the sextant, then you can hit VERB 16 NOUN 91 to read the shaft and trunnion of that star.

02 22 48 58 CMP Roger.

02 22 48 59 CC Okay. With that value, you go back in step 3 - you see flashing VERB 06 NOUN 92? - you can enter NOUN 92, which is the value you have read out.

02 22 49 09 CMP Roger.

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02 22 49 10 CC Then proceed.

02 22 49 12 CMP Okay.

02 22 49 13 CC Then you can use the ENTER button for your MARK.  
CARNARVON (REV 45)

02 23 00 45 CC Apollo 7, Houston.

02 23 00 51 CDR Go ahead, Houston.

02 23 00 53 CC Roger, Apollo 7. How is the alignment coming?

02 23 00 57 CDR We are still star reading right now.

02 23 01 03 CC Okay. Understand you are still in Program 53.

02 23 01 10 CDR We are just trying to acquire a star at this  
point, Tom.

02 23 01 13 CC Okay.

02 23 01 40 CC Apollo 7, Houston. I'll go ahead and brief  
you on what we've got planned.

02 23 01 51 CDR Wait. Let's wait, Tom, until we get done with  
this alignment.

02 23 01 58 CC Yes, yes, okay. I'll just stand by here.

02 23 02 04 CDR Okay. I would like to get this other one  
started.

02 23 02 07 CC All right.

02 23 05 18 CDR Houston, Apollo 7.

02 23 05 22 CC Go ahead, Wally.

02 23 05 24 CDR Okay. Donn is busy right now. You got a  
message for him, or could I take it?

02 23 05 30 CC That was too fast. Say again.

02 23 05 34 CDR Donn is in the MARK routine right now. Is the  
message for him, or could I take it?



02 23 05 44      CC      No, it's for the whole crew, and the main thing is to get the platform aligned. And, Wally, if you would turn up the S-band at 71 08 45, we will talk to you through Honeysuckle.

02 23 05 58      CDR      Very good. We did need the arm to curve on this TV camera; we will try to get it up for you.

02 23 06 05      CC      Okay. We want to see how the platform alignment comes out, and we will talk to you over Honeysuckle.

02 23 06 11      CDR      Okay. I'm not going to rush into anything else but that.



02 23 06 14      CC      Okay.

02 23 07 03      CC      Apollo 7, Houston.

02 23 07 07      CMP      Roger. Loud and clear.

02 23 07 09      CC      Okay. Right now, when Donn is reading the NOUN 91, is he reading - is he going to monitor real time with VERB 16 or VERB 06?

02 23 07 23      CMP      I am using 16, Tom, and I am hitting a NOUN to freeze it when I get right on.

02 23 08 28      CC      Okay. That sounds good, Donn. Sounds real good.

HONEYSUCKLE (REV 45)

02 23 09 37      CC      Apollo 7, this is Houston through Honeysuckle. How do you read?



02 23 09 53 CC Apollo 7, this is Houston through Honeysuckle.

02 23 10 18 CC Hello, Apollo 7, this is Houston through Honeysuckle. How do you read, Wally?

02 23 10 45 CC Hello, Apollo 7, this is Houston. How do you read?

02 23 11 00 CC Hello, Apollo 7, Houston. Over.

02 23 13 43 CC Apollo 7, this is Houston standing by through Honeysuckle.

02 23 15 17 CC Apollo 7, this is Houston. How do you read?  
HUNTSVILLE through BERMUDA (REV 45)

02 23 34 09 CC Hello, Apollo 7, this is Houston through the Huntsville.

02 23 34 30 CC Hello, Apollo 7, this is Houston through the Huntsville.

02 23 34 51 CC Hello, Apollo 7. This is Houston.

02 23 34 57 CT Huntsville AOS.

02 23 35 03 SC Standing by.

02 23 35 04 CC Hello, Apollo 7, Houston. How do you read?

02 23 35 20 SC ...

02 23 35 24 CC Roger. Coming in very weak, Apollo 7. How do you read? Houston.

02 23 35 39 CDR This is Apollo 7. Do you read? Over.

02 23 35 41 CC Roger. Now reading you about three-by. How did the alignment go?

02 23 36 19 SC Two-way lock.

02 23 36 23 CC Hello, Apollo 7, this is Houston. How do you read? Over.

02 23 36 27 CDR We are aligned at this time so I'm getting you in the blind.

02 23 36 33 CC Roger. Understand you are aligned.

02 23 37 12 CC Apollo 7, this is Houston through the Huntsville. We'll be picking you up over California, Guaymas shortly.

02 23 37 20 CDR Roger. You are coming in very weak. We are aligned. I am aligning the GDC at this time.

02 23 37 25 CC Roger. Good show. Understand you are aligning the GDC.

02 23 37 30 CDR ...

02 23 37 34 CC Say again, Wally.

02 23 37 37 CDR Houston, do you want TV this pass?

02 23 37 40 CC Roger. We'd like to get WSMR and TV if we could.

02 23 37 46 CDR Roger. Let's give it a go.

02 23 37 48 CC Roger.

02 23 38 45 CDR Hello, Houston, Apollo 7. How do you read now?

02 23 38 49 CC Apollo 7, this is Houston. Loud and clear. How's that for you?

02 23 38 51 CC Roger. You're coming in loud and clear, Wally. Sounds like that alignment technique worked out pretty good, right?

02 23 38 57 CDR I'm just picking up my ORDEAL right now.

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02 23 39 01 CC Good show.

02 23 39 02 CDR Star angle difference is about .18 degrees.

02 23 39 05 CC That's not bad.

02 23 39 07 LMP Tom, we went ahead and did a P54 alignment to the align time that you gave us to ... of 70 hours and 58 minutes.

02 23 39 15 CC Okay. That's what we wanted.

02 23 39 17 LMP Okay.

02 23 39 18 CDR Okay. We'll try to ... attitude ...

02 23 39 24 CC Roger. What we want you to do for the WSMR pass - and this will be over on Walt's side - we want the DSE recorded in low bit rate for the test. We want the DSE to start at 71 plus 39 plus 00. We want the DSE to stop at 71 46 plus 00.

02 23 39 50 LMP Roger. We got it.

02 23 39 52 CC Okay. Now after we finish WSMR, when we come up for the TV pass for - Walt, make sure that the tape position is OFF. Over.

02 23 40 05 LMP Roger.

02 23 40 06 CC Okay.

02 23 40 08 LMP Tape OFF now.

02 23 40 21 CC Okay. Walt, again, the tape should stop the DSE, and the tape OFF at 71 plus 46.

02 23 40 28 LMP The tape is stopped now, and the DSE is running, and I can keep the DSE running. Can I keep the DSE running with the TV on?

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02 23 40 40 CC Yes, you sure can, Walt. No problem.

02 23 40 44 LMP Roger.

02 23 41 19 CC Apollo 7, Houston. Looks like we have a real pretty day down here.

02 23 41 23 CDR Roger. That's the way it looks from here.

02 23 42 06 LMP Houston, Apollo 7.

02 23 42 08 CC Go ahead.

02 23 42 09 LMP Roger. At what time do you want the TV turned on?

02 23 42 12 CC Say again.

02 23 42 14 LMP At what time do you want the TV turned on?

02 23 42 16 CC Stand by. Roger. We are ready for TV now. Turn it on.

02 23 42 35 LMP TV going on. Let us know when you are receiving a picture.

02 23 42 42 CC Okay. It goes through a scan converter. We're looking at it now.

02 23 42 47 LMP Can you read it?

02 23 42 48 CC Well, we're looking - down here. Just stand by and keep panning.

02 23 42 53 LMP Roger.

02 23 43 32 CMP Hey, Tom, would you repeat the time for DSE STOP? I was down below when you gave it last time.

02 23 43 38 CC Say again.

02 23 43 41 CMP Repeat the time for DSE STOP.

02 23 43 44 CC DSE at 71 plus 46 plus 00.  
 02 23 43 48 CMP Roger. 46.  
 02 23 43 51 CC Apollo 7, Houston. Verify you're on omni Alfa.  
 02 23 43 56 IMP Verified.  
 02 23 43 58 CC Roger. Looks like the signal strength is a little low down here.

HUNTSVILLE through BERMUDA (REV 46)

02 23 44 03 IMP I'm reading 1 volt is all, and we did not get a full 20 minutes to warm up on that thing.  
 02 23 44 15 CC Okay.  
 02 23 44 18 CC Hey, we got you. I can see Eisele talking there. Hey, Donn, turn your head to the right. There you go. Hey, we're picking up - I can read it; just a minute. It says, "From that lovely Apollo," something - you guys should write - "High atop." something. It looks good; I can see Wally handle it now, and Donn has a smile on his face, and there's Walt. The definition is pretty good down here; I can see the center hatch. Actually I am amazed; it looks real good. Hey, Donn, how about saying something since you're panned.  
 02 23 45 08 CMP Say again.  
 02 23 45 09 CC Hey, I can read you and can see you loud and clear. It really looks good. I am amazed.

02 23 45 19      CMP      It's coming in heads down. You want us to point —

02 23 45 22      CC      Lean back a little bit; you are too close to the camera. There you are. We'll have Cecil B. De Stafford down here directing.

02 23 45 31      CMP      Roger.

02 23 45 32      CC      You forgot to shave this morning, Eisele.

02 23 45 36      CMP      Lost my razor.

02 23 45 39      CC      Some of the reproductions here are real good. I can look out through Wally's rendezvous window. I can see the COAS up there, the ORB RATE ball.

02 23 45 50      CDR      We're looking right down the Gulf Coast.

02 23 45 52      CC      Okay. What's the next one? Little closer, Wally.

02 23 45 57      CC      It says, "Keep those cards and letters coming in, Folks." It's loud and clear.

02 23 46 13      LMP      Yes, sir, there's plenty show for the whole family. Would you like to get a look out the window with the TV camera? I can give you New Orleans right here.

02 23 46 18      CC      Okay. Let's take a look and see how New Orleans is this morning.

02 23 46 38      LMP      Roger. Coming up over the Mississippi River. I'm giving you an out-the-window picture. You should see Lake Pontchartrain coming into view now.

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02 23 46 50 CC Okay. We're looking.

02 23 46 58 CDR We're changing lenses. That's a pretty wide Lake Pontchartrain he gave you.

02 23 47 02 CC Okay.

02 23 47 06 LMP There you go.

02 23 47 07 CC Roger. You got the telephoto on there?

02 23 47 12 CDR We are just crossing about now over Mobile Bay.

02 23 47 16 CC Okay.

02 23 47 17 CDR Should get it about now.

02 23 47 18 CC Okay. We're starting to get it. Looks like there's a few clouds down there. Yes, we can see it. Is that the coastline you're panning right now?

02 23 47 33 CDR Going over Mobile now, and quickly, and we'll be coming across Pensacola shortly.

02 23 47 38 CC Okay. Wally, can you focus one spot for a minute? We can see the orbital rate coming in real fast. There you go. Try to hold it on one spot. Now you can see the coastline.

02 23 47 58 CDR There's a paper mill north of Pensacola that I'll train on.

02 23 48 02 CC Okay.

02 23 48 04 CDR We had a beautiful day; you're right. Should give you a good shot of the Cape today.

02 23 48 07 CC All right. Yes, there's the coastline; it's coming in good.

02 23 48 14 CDR Roger.

02 23 48 15 CC Real good.

02 23 48 19 CDR You might get a kick out of the fact the constellation we used for alignment was ...

02 23 48 24 CC All right.

02 23 48 33 CDR ... we used for alignment.

02 23 48 36 CC Okay. Are you passing over Florida now?

02 23 48 38 CDR Affirmative.

02 23 48 39 CC Okay. If you can just hold it. The big thing on that long lens is just to hold it still for one spot and then move to another, it looks like. You can sure see orbital motion.

02 23 49 03 CDR Tom, we used ... for alignment if you haven't figured it out yet.

02 23 49 08 CC You're coming in garbled, Wally, so I couldn't hear you.

02 23 49 11 CDR Guess what constellation we used for the alignment?

02 23 49 19 CC Okay. Stand by. We'll get it.

02 23 49 21 CDR Negative. It was Orion.

02 23 49 23 CC Oh, I thought you said Urian.

02 23 49 25 CDR You're right.

02 23 49 37 CDR We're switching lenses again, Tom.

02 23 49 40 CC Okay.

02 23 49 46 CC Okay. It looks like we lost TV, and we've done some spade work down here. Looks like we found out what's wrong with the MARK button.

02 23 49 54 CDR Very good.

02 23 49 55 CC Okay. It looks like there is an improper exit from a program yesterday, and if the IMU's aligned, we'll select program 20. If you got a piece of paper, we'll copy it down.

02 23 50 06 CDR Okay. I'm checking the fuel right now so I'll know how much that cost us. Okay. Ready to copy.

02 23 50 12 CC Okay. Go ahead and select program 20. You'll then do VERB 57 ENTER. After that, you will key ENTER, and then you will select program 00. Now what that does is cause a reset of flag word 2 bit 14 which is SET, which has prevented that MARK from getting in.

02 23 50 42 CDR You broke up after key ENTER, Tom. We have program 20, VERB 57 ENTER, then key in ENTER, then program something.

02 23 50 48 CC Then select P00, p-zero-zero.

02 23 51 31 CC Hello, Apollo 7, Houston.

02 23 51 32 CDR Go ahead, Tom.

02 23 51 35 CC Roger. Did you get that procedure okay?

02 23 51 38 CDR We copied. It was program 20, VERB 57 ENTER, key in ENTER, then back to P00. That I picked up.

02 23 51 45 CC Roger. That should reset that flag word, and you should be all set to use program 51 and 52 as normal.

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02 23 51 53 CDR ...

02 23 51 55 CC And again, I can't tell you how good the TV picture looked down here inside the spacecraft. Just beautiful.

02 23 52 03 CDR Roger. We estimate two cards for later.

02 23 52 06 CC Okay. One thing we'd like to talk to you about now is how we are going to change the flight plan a little bit.

02 23 52 19 CDR Go ahead.

02 23 52 20 CC Okay. Because of that AC glitch last night and the present status of the RCS fuel, we're going to move the third SPS burn up to today. And we're going to plan to make that burn about 75 hours and 48 minutes, so we have about 4 hours to go in which that will bring the perigee on down to 90 miles, and then we'll be way inside the red-line.

02 23 52 50 CDR Roger. I think that last pass for our last alignment problem is an example of why I didn't want to eat up our fuel earlier ... of the rather obscure DPO's. The land we saw was an example of why I didn't want to eat up our fuel earlier ... rather obscure DPO's.

02 23 53 02 CC Okay.

02 23 53 03 CDR This is still the first flight.

02 23 53 04 CC Roger.

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02 23 53 14 LMP Tom, when you pass up the total RCS propellant remaining, I would like to get a readout for each quad, also.

02 23 53 29 CC Apollo 7, Houston.

02 23 53 31 LMP Go ahead.

02 23 53 32 CC Okay. What we'll plan to do is put you the NAV load for this maneuver up over the Canaries, and we'll be passing over that in about another 4 to 5 minutes.

02 23 53 46 CDR Roger. Standing by.

02 23 53 49 CC So if you get a chance, go ahead and select program 00.

02 23 53 54 CDR We have already tried to work that. It didn't work so we'll go back into P7.

02 23 53 58 CC Okay.

CANARY (REV 46)

03 00 00 40 CC Apollo 7, Houston through Canary.

03 00 00 44 CDR Roger. Go.

03 00 00 47 CC Roger. I read you five-by.

03 00 00 51 LMP Jack, would you say again the burn time for burn 3?

03 00 00 54 CC Roger. 75 48. We're going to be sending you up some NAV loads, and I'll be passing you up a maneuver PAD here.

03 00 01 04 LMP Fine.

03 00 01 14 CC Apollo 7, Houston. If you will go to ACCEPT, we'll send you up a NAV load.

03 00 01 20 LMP Roger. ACCEPT.

03 00 01 21 CC Okay. Walt, you might let me know when you're ready to copy your maneuver PAD.

03 00 01 26 LMP Copy.

03 00 01 28 CC Roger. SPS 3, 075 47 5860 minus 00550 plus 02000 plus 00410 1601 plus 0903 02007 30584 minus 086 minus 046 0 plus 0930 3484 323 075 05 all balls plus 1330 minus 05642 1256 000 000 and 000. Remarks: SCS control 20 seconds two-jet ullage using quads B and D. You will be out of plane to the south, slightly retrograde, slightly pitch down; the sextant star will not be visible after 075 plus 35 plus 00.

0 03 00 03 36 LMP Roger. I'll hit the remarks first. We won't be doing a two-jet ullage on SCS burn, Jack, and burn 3, 075 47 5860 minus 00550 plus 02000 plus 00410 1601 plus 0903 02007 30584 minus 086 minus 046 009 30 3484 323 075 05 0000 plus 1330 minus 05642 1256; all balls on the roll, pitch, and yaw. It's SCS burns for 20 seconds, and you called two-jet ullage. That's a negative on the two-jet ullage. Out-of-plane south slightly retrograde and sextant star before 75 hours 35 minutes.

03 00 04 41 CC Roger. The reason we are doing a two-jet ullage, Walt, is to even up the RCS fuel. When we do this, all the quads will be even, and we will be in fat shape for an SCS RCS deorbit redline.

03 00 04 55 CDR You said a two-jet RCS, Jack, using two quads. We can't do it.

03 00 05 03 LMP Jack, the only two-jet ullage we're going to do is on a G&N burn.

03 00 05 09 CC Roger. We'll come back with you over that, over Tananarive. And we have the loads in, verified; the computer is yours.

03 00 06 50 LMP Houston, Apollo 7. We have a MAV check ...

03 00 06 54 CC Roger. Say again.  
TANANARIVE (REV 46)

03 00 19 16 CC Apollo 7, Houston through Tananarive.

03 00 19 32 CDR Roger, Houston. Read you loud and clear.

03 00 19 34 CC You're five-by. On the - on this two-jet ullage: Wally, we felt that we could do a two-jet SCS ullage, RCS ullage, and save about 8 pounds of RCS fuel. You can do this by having the pitch and yaw channel switches at A and pulling pitch main A circuit breaker. How do you feel about that?

03 00 20 04 CDR We've got to fly attitude ... energy, Jack, and that 20 seconds that will give you a pretty tight burn.

03 00 20 10 CC You will still have two-jet ullage attitude hold.

03 00 20 18 CDR The main thing is I don't think a G&N burn will conserve fuel anyway.

03 00 20 22 CC Okay. If you are uncomfortable about it, we will go with the four jets. We just thought we could save you about 8 pounds of fuel.

03 00 21 29 CDR Okay. We will go four jets.

03 00 20 31 CC Okay. Understand.

03 00 20 43 CC Apollo 7, Houston.

03 00 20 45 CDR Go ahead.

03 00 20 46 CC Okay. Wally, on this AC glitch, what they are doing is - we have a series of tests being run off line first, but we're using 106 at the factory to check out all the AC systems in the sensing systems. At the Beach, they are testing

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the whole lashup, the CRYO stands, heaters, and everything; and we should have some data on this by tomorrow.

03 00 21 10 CDR Okay. Tom, I think you should realize that all that trouble of going to the hybrid gears is that kind of glitch coming along.

03 00 21 16 CC That's right, and that is why we just decided to go ahead and do this burn 3 and get the perigee down.

03 00 21 24 CDR Okay. We will be doing two jet here; we will have to kick it over for a while.

03 00 21 28 CC Okay. Then we have got plenty of time to pick it up later. No problem on that.

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03 00 21 32 CDR

Okay.

03 00 21 34 CC And they don't plan - they are not suggesting running any test on board up there, what with the AC power. We will do it all on the ground and tell you what we find out.

03 00 21 42 CDR Okay. We are knocking off all the fuels since we want to stay out of gimbal lock.

03 00 21 47 CC Say again.

03 00 21 49 CDR We are knocking off all fuels except for one in gimbal lock.

03 00 21 54 CC Okay. What we are going to do is delete for the present all flight plan items after 72 hours to prepare for this burn.

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03 00 22 06 CDR Concur.

03 00 26 31 CC Apollo 7, Houston. One minute to LOS Tananarive; we will pick up ARIA 2 in about 2 minutes and then on through to Carnarvon.  
CARNARVON (REV 46)

03 00 35 28 CC Apollo 7, Houston through Carnarvon.

03 00 35 31 CDR Roger. You are loud and clear, Jack.

03 00 35 32 CC You are loud and clear, Wally. We have a procedure for troubleshooting that loss of the voice and telemetry subcarrier that we had. Are you ready to go?

03 00 35 45 CDR I'll take it down.

03 00 35 47 CC Okay. We are just going to walk you through it. Walt, we would like you to switch the S-band transponder switch to PRIMARY, pausing in OFF as you go through from SECONDARY to OFF to PRIMARY.

03 00 36 01 CDR Jack, I'll slide over to the right seat, and I will follow you up again.

03 00 36 05 CC Okay. We would like to switch the primary S-band transponder switch into OFF, pausing a bit, and then to PRIMARY.

03 00 36 22 CDR S-band - -

03 00 36 24 CC S-band transponder.

03 00 36 29 CDR Okay. Going into PRIMARY, then OFF, then back to PRIMARY.

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0 03 00 36 39 CC Okay. We got it.

03 00 36 44 CDR Is that it?

03 00 36 45 CC Okay. Now we are going to wait a bit and look at some data here.

03 00 36 50 CDR Roger. Do I have time to blow my nose?

03 00 36 57 CC Go ahead.

03 00 38 10 CDR Houston, Apollo 7.

03 00 38 11 CC Go ahead.

03 00 38 13 CDR Roger. Do you have a click, click, click in your receiver?

03 00 38 17 CC Negative. Negative, Wally.

03 00 38 24 CDR Okay. Confirm that the digital pilot goes click, click, click, click, click.

⊖ 03 00 38 29 CC Roger. Stand by.

03 00 38 36 CDR Whatever that was, it stopped it.

03 00 38 38 CC Roger.

03 00 38 40 CDR It must have been something wrong with Carnarvon's receiver - transmitter.

03 00 38 46 CDR Keep checking on it.

03 00 38 47 CC Roger.

03 00 38 50 CDR Okay. Jack, I think Carnarvon probably had to switch transmitters down there ...

03 00 39 05 CC Okay. Stand by, Wally.

03 00 39 08 CDR Roger.

03 00 39 16 CDR Carnarvon, this is Wally Schirra. Nice to pass overhead again and good luck ...

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03 00 41 34 CC Apollo 7, Houston.

03 00 41 36 CDR Go, Jack.

03 00 41 37 CC Roger. On the results of this transponder shift that we've gone through: we've got our voice and telemetry subcarrier back. We are GO on the primary transponder. The problem was in the secondary transponder so we are GO the way we are.

03 00 41 55 CDR Very good. I'll leave it this way.

03 00 42 07 CC Wally, do you still have the clicking in the receiver?

03 00 42 10 CDR That is why I was complimenting Carnarvon. They got on it right away and clicked it off.

03 00 42 14 CC Okay. Real fine.

03 00 42 20 CDR They were paying attention to us and did a very good job.

03 00 42 23 CC Roger.

03 00 42 48 CDR Jack, I would say the team worked harder today than they did yesterday.

03 00 42 53 CC Say again, Wally.

03 00 42 55 CDR I say the team worked harder today than they did yesterday.

03 00 42 58 CC You bet your life.

03 00 43 01 CDR Good show.

03 00 43 41 CC Apollo 7, Houston. You want to turn up your S-band volume? We are just about to lose you over Carnarvon here.

0 03 00 43 47 CDR Roger.

03 00 43 50 CC And, 7, looks like that right now we observe the primary evaporator to have dried out again.

03 00 44 01 CDR It figures. A direct hit.  
HONEYSUCKLE (REV 46)

03 00 46 39 CC Apollo 7, Houston. We're 1 minute LOS Honey-suckle; Hawaii in 15 minutes.  
HAWAII (REV 46)

03 01 01 41 CC Apollo 7, Houston through Hawaii.

03 01 01 49 SC Houston, Apollo 7.

03 01 01 51 CC Roger. Five-by.

03 01 01 54 CC Aloha. We would like to ask you whether you were able to accomplish the switching ...

⊖ 03 01 01 59 LMP Jack, I have the tape recorder being rewound now. I'll give you a call when we're through rewinding; we'll be ready for dump. We did a P52 alignment in the last night pass; used Diphda and Aldebaran and got five balls, and the star angle difference should be on the tape.

03 01 02 20 CC Roger. Copy.

03 01 02 23 LMP I mean the torquing angle should be on the tape.

03 01 02 26 CC Okay. Copy that. Walt, we would like to ask you whether you were able to accomplish the switching operation.

03 01 02 35 LMP Do you read, Jack?

⊙ 03 01 02 36 CC Apollo 7, do you read? Houston.

0 03 01 02 41 CC Apollo 7, do you read? Houston.

03 01 02 50 CC Apollo 7, Houston.

03 01 03 05 CC Hello, Apollo 7, Houston.

03 01 03 15 CC Apollo 7, do you read? Houston.

03 01 04 37 CC Apollo 7, how do you read? Houston.

03 01 05 21 CC Apollo 7, Houston.

03 01 06 12 CC Apollo 7, Houston.

03 01 06 15 CMP Go ahead.

03 01 06 17 CC Roger. Walt, we copied your transmission on P52. We would like to know whether you were able to accomplish the switching operation for the WSMR rendezvous radar test during the TV operation.

⊖ 03 01 06 32 LMP I had the heater on for only about 2 minutes. We had not counted on performing that, and the whole sequence idea was a bit too rushed. We probably should not even attempted it, Jack. However, we did turn the heater on for a couple of minutes, turned it to POWER; we read out the test meter readouts, and I don't know if we passed them down, but we got them logged on board here. The lockon - the signal strength never came up above about 1.4 volts, I think it was.

03 01 07 03 CC Okay. We copy that.

03 01 07 08 CDR Did you have any results from WSMR?

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0 03 01 07 11 CC Negative. There is no results from WSMR.

03 01 07 13 CDR Okay. And since we're up pretty well on fuel now, we'd like to try again on the second call-out.

03 01 07 20 CC Wally, it looks like we're gonna have a chance about - we may have a chance about 30 minutes after the burn to get - to try again over WSMR.

03 01 07 32 CDR Okay. And that might be pretty good. We'll have a burning attitude and can psych out on that one.

03 01 07 37 CC Right.

03 01 07 38 CDR We'll stay in burn attitude and listen to S-band.

⊖ 03 01 07 40 CC Okay.

03 01 07 49 CC Okay. Wally, I wanted to ask you a question. Did you have a problem with your BIOMED harness one time?

03 01 07 57 CDR Yes, I did. Aren't you reading me now?

03 01 08 01 CC We're reading.

03 01 08 02 CDR You're reading center now, aren't you?

03 01 08 04 CC Yes, we're reading center now. You want to go to IMP?

03 01 08 09 CDR Okay. We have switched to IMP. You want IMP; center is IMP.

03 01 08 15 CC Okay. Real fine.

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0 03 01 08 17 CDR Just to give you a cable connection: the CDR is in the right seat, LMP is in the center seat, and CMP is in the left seat.

03 01 08 38 CDR That is per flight plan burn 3.

03 01 08 39 CC Roger. We copy that.

03 01 08 40 CDR Roger.

03 01 08 41 LMP Jack, do you have enough time this pass for me to start a tape dump? It's rewind.

03 01 08 48 CC Negative, Walt. We'll hit you over the States for the tape dump.

03 01 08 54 CDR Okay. Are you people in a position to command those tape dumps?

03 01 08 57 CC Affirmative.  
HUNTSVILLE (REV 46)

03 01 09 33 CT Huntsville AOS. A two-way lock.

03 01 10 52 CT Huntsville LOS.

03 01 11 20 CT Huntsville AOS, and downlink signal is very weak. Downlink signal very weak.

GOLDSTONE through BERMUDA (REV 46)

03 01 12 57 CC Apollo 7, Houston.

03 01 13 00 CDR Roger. Houston.

03 01 13 02 CC Roger. Wally, at your leisure, we'd like to get some command module RCS temperature read-outs.

03 01 13 11 CDR Okay. Stand by. We'll be coming ...

C 03 01 13 15 CC Roger.

0 03 01 13 25 CMP Roger. Jack, 5C reads 5 volts full scale. 5D is 5 volts full scale. 6A is 4.9. 6B is 5.0. 6C is 4.8. 6D is 4.9 volts.

03 01 13 53 CC Real fine. We have some - due to this transponder problem, we'd like to reconfigure some switches there, and then we will be back in the normal configuration for our COMM switches. Could we get you to put your power PMP switch to NORMAL?

03 01 14 15 CDR PMP is set.

03 01 14 18 CC Okay. Okay. Your forward rewind switch to FORWARD.

03 01 14 28 CDR Forward rewind switch to FORWARD.

⊖ 03 01 14 31 CC Your record play switch to RECORD.

03 01 14 33 CDR RECORD.

03 01 14 34 CC Your telemetry input switch to LOW.

03 01 14 38 CDR It's there; verifying.

03 01 14 42 CC Okay. Real fine. We're now back in normal configuration.

03 01 14 45 CDR Okay. You asked about my BIOMED. I checked, and the lead was apart again.

03 01 14 50 CC Okay. Real fine.

03 01 14 52 CDR It's too short. They've must have changed the thing since I tried it last. It was all right during flight preparations.

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03 01 15 03 CMP Hey, Jack, I still have the tape switch OFF. Do you want the tape switch ON?

03 01 15 14 CC Okay. We want the switches just like you've got them.

03 01 15 16 CMP Okay. The tape is OFF, and the tape is rewound. No motion. Standing by for your dump. Could you summarize what you found wrong with the COMM system? Also, we should tell you that we could not get the glycol evaporator back on the line.

03 01 15 38 CC Roger. We copy that.

03 01 15 50 CC Okay. Apollo 7, did you try and reservice the primary evaporator?

03 01 15 54 CMP That's affirm.

03 01 15 56 CC Roger.

03 01 16 39 CC Apollo 7, Houston.

03 01 16 51 CC Apollo 7, Houston.

03 01 17 05 CC Apollo 7, Houston.

03 01 17 08 CDR Go ahead.

03 01 17 19 CC Roger. To summarize our findings on the COMM system: we have found that the secondary transponder has failed. We have normal operation on the primary transponder, and except for the secondary problem, our COMM system is operating normally.

03 01 17 29 CDR Roger.

03 01 19 31 CC Apollo 7, Houston.

0 03 01 19 35 CDR Go ahead.

03 01 19 36 CC Wally, on that BIOMED harness - that problem that you reported. Do you think you'll have time to do any repair work on it?

03 01 19 46 CDR Afraid not.

03 01 19 50 CDR The next time you are reading me, if you aren't getting it, ask and I can plug it back in. It seems to pull out when we exercise or during a sleep period.

03 01 19 59 CC Okay. We copy.

03 01 20 02 CDR It's no problem to hook it up.

03 01 20 09 CDR One of the sensors is leaking. You better leave it out or pull it off.

⊖ 03 01 20 22 CT Canary LOS.

03 01 20 27 CDR Houston, this is CDR. Let me give you a check on this. I got a light; check my lead. Houston, did you receive?

03 01 20 39 CC Stand by, Wally.

03 01 21 47 CC Apollo 7, Houston. We're reading LMP data in the center seat.

03 01 21 57 LMP Roger. We switched it over, and now it's over in the right seat.

03 01 22 03 CC Okay. We copy the switch.

03 01 22 09 CC Okay. We're getting good data.

03 01 22 12 LMP We're getting that radio station interference again.

○ 03 01 22 16 CC Okay.

## GOLDSTONE through BERMUDA (REV 47)

03 01 22 30 CC Apollo 7, opposite omni.

03 01 24 16 LMP Our magazine, 0 for Oboe.

03 01 24 21 CC Roger. Copy.

03 01 24 22 LMP Five, six, seven, and eight. Starting with  
Crestview - Pensacola area, Tallahassee,  
Jacksonville, St. John's river outlet to the  
Atlantic.

03 01 24 39 CC Okay. We copy magazine Oboe six, seven, and  
eight.

03 01 24 43 LMP Roger. That was five, six, seven, and eight.

03 01 24 45 CC Copy.

03 01 24 47 CMP Roger. Five, six, seven, and eight.

03 01 24 50 CMP Hey, Jack, we need a map update.

03 01 24 54 CC Okay. Coming up.

03 01 24 55 CMP Thank you.

03 01 25 10 CDR By the way, these five windows, almost every  
damn one of them is looking at something.

03 01 25 20 CC I didn't copy that, Wally. Could you say again?

03 01 25 21 CDR Roger. These five windows have a view almost  
all the time, except the center hatch window is  
useless for anything now.

03 01 25 30 CC Roger. Copy.

03 01 25 35 CDR That would be a beautiful window to have working.

03 01 25 40 CC Roger. We agree.

03 01 25 54 CC Okay. Apollo 7, I have your map update.

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03 01 25 57 CDR Roger. Go ahead.

03 01 25 59 CC Okay. For REV 46, the GET of the node is 72 plus 57 plus 26. Longitude 178.7 degrees east, right ascension 05 plus 28.

03 01 26 18 CDR Thank you.

03 01 27 04 CDR Jack, on frames 58 and 59, Bermuda.

03 01 27 17 CC Say again, Apollo 7.

03 01 27 20 CDR Frames 58 and 59 magazine Oboe, we're on Bermuda loud and clear.

03 01 27 26 CC Roger.

03 01 27 27 CDR Complete stratus just north of us for an awful long distance.

03 01 27 35 CDR The Western Atlantic is pretty well clouded over.

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03 01 27 38 CC Okay. We copy that.

03 01 27 42 CDR I would say about 40 miles east of Bermuda, there's a long frontal line. It's running on a line about north and south. The tops are rather difficult to estimate. That's about all I can see at this time.

03 01 27 55 CC Okay. Copy.

03 01 29 24 CC Apollo 7, Houston. We're 1 minute LOS Bermuda; Antiguas not up now, so we'll pick you up over Ascension in about 10 minutes.

03 01 29 34 CDR Roger. Thank Bermuda for staying up for us; will be glad to take their picture. Ready to take a picture.

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03 01 29 44 CC Apollo 7, Houston. It appears we got 85 degrees yaw. Do you concur?

ASCENSION (REV 47)

03 01 39 40 CC Apollo 7, Houston.

03 01 40 06 CC Apollo 7, Houston through Ascension.

03 01 40 29 CC Apollo 7, Houston. How do you read?

03 01 40 33 CDR Houston, read you loud and clear. How we?

03 01 40 35 CC You're five-by. We copied coarse align.

03 01 40 42 SC Apollo 7. We are realigning.

03 01 40 44 CC Okay. You're going to need to do P51 and 52 again. You go through P51 and then P40 and then P52. As a reminder, it will not be necessary to go to P30; however, if you do, you will have to reload the targets.

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03 01 41 15 CC Did you copy that, ??

03 01 41 34 CC Apollo 7, Houston.

03 01 41 36 CDR Say again.

03 01 41 38 CC Roger. Could you copy my message about the programs?

03 01 41 44 CDR Say again, Jack.

03 01 41 46 CC Okay. You'll go through 51 then 40 and then P52. As a reminder, it won't be necessary to go to program 30; if you do, you will have to reload the target.

03 01 42 01 CDR Understand.

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0 03 01 42 03 CC Okay. Real fine. One question on the primary evaporator: did you - did the steam pressure come up to NORMAL? After the serve - reservice?

03 01 42 17 CDR Jack, the steam pressure did not move one iota.

03 01 42 21 CC Okay. Copy that.

03 01 44 27 CC Apollo 7, Houston.

03 01 44 32 CDR Go ahead, Houston.

03 01 44 33 CC Roger. Would you go INCREASE for 45 seconds on your steam pressure control valve switch?

03 01 44 43 LMP Roger. We'll try it again.

03 01 45 53 CC Apollo 7, Houston. Thirty seconds LOS Ascension; we'll pick you up over Tananarive in about 18 minutes. We'd like to watch our reservice over Canarvon.

⊖ 03 01 46 07 LMP Roger. Understand. No response on EVAP pressure valve.

03 01 46 10 CC Roger. We copy that.  
TANANARIVE (REV 47)

03 01 55 10 CC Apollo 7, Houston through Tananarive.

03 01 55 46 CC Apollo 7, Houston through Tananarive.

03 01 56 32 CC Apollo 7, Houston through Tananarive.

03 01 57 37 CC Apollo 7, Houston through Tananarive.

03 01 57 40 CDR Okay. Houston, do you read me now?

03 01 57 42 CC I read you five-by, Wally.

03 01 57 43 CDR Roger ...

○ 03 01 57 47 CC Roger.

0 03 02 01 11 CC Apollo 7, Houston. Forty-five seconds LOS  
Tanalarive; we will pick you up over Carnarvon  
in about 8 minutes.  
CARNARVON (REV 47)

03 02 10 02 CDR Houston, Apollo 7.

03 02 10 05 CC Apollo 7, read you five-by.

03 02 10 08 CDR Roger. We just resynchronized our MET of the  
MPC. It was running 5 seconds slow. The MET  
of the LEB is right on.

03 02 10 18 CC Okay. Copy that. And, Wally, we are standing  
by to watch your primary evaporator reservice,  
if you're ready for it.

03 02 10 29 CDR Jack, as you're reading it, the steam pressure  
has come up.

03 02 10 33 CC Okay. We copy that now; we see it. The other  
thing is - the burn 3 flight plan activity -  
is of the SCS attitude reference check, and the  
SIA stamping - SCS SIA stamping we would just  
like to remind you of those.

03 02 10 48 CDR Roger.

03 02 12 05 CC Apollo 7, we copied your clock problems. We  
would like to give you a GET hack at 074 plus  
12 plus 30 in about 15 seconds.

03 02 12 17 CDR Here we've got a 16 65 off the board.

03 02 12 20 CC Okay.

03 02 12 25 CMP The water boiler light is on again.

0 03 02 12 29 CC Copy. I passed up that check, due to your water boiler comment. I'll give it to you at 074 plus 13 plus 00.

03 02 12 42 CMP We can take it any time.

03 02 12 43 CDR 13 is good.

03 02 12 51 CDR Aren't you reading out DSKY?

03 02 12 54 CC Yes, we have a delay here, Wally. There's - four, three, two, one.

03 02 12 59 CC MARK.

03 02 13 00 CC 074 plus 13 plus 00. We're reading the DSKY, but we have a delay down here so we're not quite accurate.

03 02 13 09 CDR After the simulation, we're 7/100 of a second off.

03 02 13 12 CC Okay. Copy.

03 02 13 15 CDR Okay. Jack, when you gave yours, I had 59 and 93.

03 02 14 53 CC Apollo 7, Houston.

03 02 14 55 CDR Go ahead.

03 02 14 56 CC Do you have any thoughts on why the evaporator didn't reservice the time before this?

03 02 15 05 CDR We gave it 5 minutes. This time, we gave it a little bit longer. That may be the variable.

03 02 15 11 CC Okay. Copy.

03 02 15 14 CDR If it was ... it happened between this one and the one you did; that may not be the answer.

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0 03 02 15 19 CMP Jack, it came back spontaneously like it did once earlier in the flight.

03 02 15 26 CMP ...

03 02 15 29 CC Roger. We copy that.

03 02 15 32 CMP The EVAP pressure valve - or water control valve is frozen closed or something?

03 02 15 39 CMP It more or less comes back on its own.

03 02 15 42 CC Okay. We copy.

03 02 15 45 CMP When I see it coming back, I generally help it along by throwing a little water on it.

03 02 16 00 CC Walt, or Wally, do you think it might be a sticky solenoid in the water control valve?

03 02 16 08 LMP Could be; it's that kind of a trouble.

⊖ 03 02 16 11 CC Okay.

03 02 17 53 CC Apollo 7, Houston. One minute LOS Carnarvon; Hawaii in 18 minutes.

03 02 17 58 CDR That's what we've got here.

03 02 18 00 CC Roger.

HAWAII (REV 47)

03 02 37 18 CC Apollo 7, Houston through Hawaii.

03 02 37 21 LMP Roger. Loud and clear.

03 02 37 23 CC You are loud and clear. We would like to pass up this WSMR rendezvous radar test data now - before we get all tied up with burn procedures.

03 02 37 37 LMP Okay. We were just thinking about that ourselves. That's pretty close ESP.

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0 03 02 37 44 CC Okay. Let me know when you are ready to copy.

03 02 37 47 CMP Go ahead.

03 02 37 48 CC Okay. Your roll attitude will be 349.3, pitch 305.8, yaw 061. Your GET AOS will be 76 plus 23. Estimated GET rendezvous radar lock 76 plus 25. There is a remark: the rendezvous transponder heater ON at 76 plus 00.

03 02 38 38 CDR Roger. Understand. Attitude 349.3, 305.8, 061.0, AOS at 76 plus 23, lockon at 76 plus 25, heater ON at 76 plus 00.

03 02 38 57 CC Roger. That yaw attitude would be better at 060.8.

03 02 39 04 CDR We will get it pretty close to 060, Jack.

⊖ 03 02 39 06 CC Okay.

03 02 39 08 CDR Roger.

03 02 39 12 LMP Do you people have any druthers for S-band antennas covering this burn?

03 02 39 16 CC Okay. Stand by. We'll get it to you.

03 02 39 21 CDR Jack, on this slosh test - that's all the more reason to go to four jets. I want you to read the procedure during the burn.

03 02 39 33 CC Roger. Wally, we copy.

03 02 39 36 CDR Okay. I'm going down into attitude now.

03 02 39 58 LMP Hey, Jack, is the S-IVB still up?

03 02 40 01 CC Affirmative.

○ 03 02 40 04 LMP I don't know if we ever reported to you, but Wally and I observed it visually when it was

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about 400 miles behind us. What's its relative position now?

03 02 40 14 CC Okay. Stand by. We will give it to you exactly.  
 03 02 40 20 CDR Within a mile or two would be good enough.  
 03 02 40 31 CC Apollo 7, the S-IV3 appears to be about 700 and some odd miles ahead of you.  
 03 02 40 45 LMP Roger.

HUNTSVILLE through MILA (REV 47)

03 02 41 16 CT Huntsville AOS.  
 03 02 44 09 CT Huntsville. Two-way lock, solid range.

HUNTSVILLE through MILA (REV 48)

03 02 52 17 LMP Houston, Apollo 7. Over.  
 03 02 52 19 CC Go ahead.  
 03 02 52 21 LMP I think we are passing over Baja California again. I took frames on magazine 0: frames 55 and 56 Hawaiian Islands; 57 and 58 were Baja California, Gulf of California.

03 02 52 51 CC Roger. Copy that, Walt.  
 03 02 53 28 CC Apollo 7, Houston.  
 03 02 53 34 LMP Go, Houston.  
 03 02 53 35 CC Roger. We would like for you to turn your O<sub>2</sub> fan 1 to ON for 3 minutes here.  
 03 02 53 43 LMP Hey, Jack, every several hours, I've been switching fans like this.  
 03 02 53 47 CC Okay. Copy that.  
 03 02 54 01 CC Walt, when was the last time you did it on tank 1?

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03 02 54 05 LMP On tank 1 - oh, maybe an hour and a half ago.

03 02 54 11 CC Okay. We would like you to do it again here if you would.

03 02 54 17 LMP Done.

03 02 54 36 LMP Jack, I gave you the wrong frame numbers a while ago. I just uncovered 65, and it looks like about 58 and 59 with the Hawaiian Islands and 60, 61, 62 coming across the Gulf Coast of Mexico.

03 02 54 54 CC Okay. Copy.

03 02 55 29 CDR Houston, Apollo 7.

03 02 55 31 CC Go ahead.

03 02 55 32 CDR Did you get the fuel usage on that backup alignment technique?

03 02 55 37 CC I'll see if I can get some figures on that for you to pass up.

03 02 55 43 CDR Okay. The fuel we had before we tried the alignment up here ... the fuel we had when we came across the States on the TV pass.

03 02 55 58 CC Okay.

03 02 57 58 CC Apollo 7, Houston. You can turn O<sub>2</sub> tank 1 fan off.

03 02 58 07 LMP Tank 1 fan is OFF. Is it your wish, Bill, only to have one running at a time so I never lose two buses, or do you intend to keep them both off and put them on for the ... DSKY once in a while?

0 03 02 58 20 CC Okay. Walt, what we're going to do - that's what we have been doing - is having only one fan on at a time. What we are going to do over Ascension here, we want you to turn the fans in tank 2 off, and then you'll have them both OFF; and after the burn, we'll turn the number 2 fan back on.

03 02 58 40 LMP Okay. I got both of them OFF now. You want number 2 back ON?

03 02 58 48 CC Roger. Turn number 2 on right now; we'll turn it off at Ascension.

03 02 58 55 LMP Roger. It's on. I just took frames 63 and 64 of magazine 0.

⊖ 03 02 59 02 CC Okay.

ANTIGUA through BERMUDA (REV 48)

03 03 01 35 CC Apollo 7, Houston.

03 03 01 38 LMP Roger. Go.

03 03 01 40 CC Roger. On that question about the RCS fuel usage: for the period across the States and including the backup alignment, we - about all we can accurately predict is about 5 pounds of RCS fuel usage.

03 03 01 55 CDR You had to predict, Jack? You couldn't measure that, huh? ...

03 03 02 01 CC This --

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0 03 03 02 03 CMP Again, we would like to have an update to our onboard charts now if you have it, and then one after the burn, please.

03 03 02 09 CC Okay. Coming up.

03 03 02 13 CDR Jack, while you're at it, I'd like to have you consider eliminating the chlorination of our water today. It took just about - oh, about 3 ... before it started tasting palatable again.

03 03 02 27 CC Okay. Copy.

03 03 02 29 CDR And we'll put chlorine in tomorrow.

03 03 02 32 CC Okay. Stand by.

03 03 03 36 CC Apollo 7, are you in AUTO in the primary evaporator steam pressure?

⊖ 03 03 03 43 SC That's affirmative, and I see ... thank you very much.

03 03 03 47 CC Okay.

03 03 03 50 SC This time I'm not going to try to increase it; I'm going to try to just turn the water on.

03 03 04 01 CC Okay, Apollo 7. We don't want you to do that.

03 03 04 05 LMP Okay.

03 03 04 14 LMP Must be dried out.

03 03 04 16 CC Okay. Stand by one.

03 03 04 21 LMP Okay. I'm following malfunction procedures again; I'll attempt to increase it.

03 03 04 29 CC Okay. We concur on it.

⊖ 03 03 04 59 LMP It seems to be coming up.

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03 03 05 04 CC Roger. We copy.

03 03 05 18 CC And, Walt, we suggest that you leave the back pressure valve closed until after the burn, and then we'll think it out. We'll have the answer to Wally's chlorination question after the burn, also.

03 03 05 33 CDR Last night, we had some pretty bad water; it was pretty disappointing.

03 03 05 37 CC Okay. Copy.

03 03 05 39 IMP I couldn't eat the last part of my last meal yesterday 'cause I didn't want to put that water in it.

03 03 05 43 CC Roger.

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03 03 05 46 CDR A lift-off agreement was that if it tasted bad, we'd stop; we're just proposing to knock off 1 day.

03 03 05 53 CC Okay. We copy.

03 03 05 55 CDR Roger.

03 03 06 14 IMP Houston, I've been able to get this up to a normal range so I suspect that with a little manipulation of the water flow, I can get this ... boiler operating again. That's the way I did it once before.

03 03 06 25 CC Roger. Copy. And, Walt, the figure to update your onboard RCS chart is 800 pounds, 800.

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0 03 03 06 33 LMP Understand. 800 now and will be standing by for one after the burn. And what does quad C have now?

03 03 06 42 CC Stand by.

03 03 07 04 CC We will pick you up over Ascension in about 6 minutes, Walt.

03 03 07 17 LMP Roger.  
ASCENSION (REV 48)

03 03 13 40 CC Hello, Apollo 7, Houston.

03 03 13 52 CC Hello, Apollo 7, Houston.

03 03 14 04 CC Hello, Apollo 7, Houston.

03 03 15 06 CC Hello, Apollo 7, Houston.

03 03 15 09 CDR Roger. Loud and clear.

⊖ 03 03 15 10 CC Roger. You're now coming in loud and clear. I'll again remind you on the star check that the sextant stars are not visible after 75 plus 35.

03 03 15 24 CDR Roger. We're set up now.

03 03 15 27 CC And I just wanted to recheck on what the stars look like, and also, Jack will talk to you now on the CRYO's.

03 03 15 36 LMP Okay. We think we had a star check in daylight, but we're not sure.

03 03 15 40 CC Okay.

03 03 15 41 LMP The approximate attitude and - I looked for the star, and it came in with AUTO optics. I'm pretty sure it was lined up, and I'm

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pretty sure I was looking at the right star  
in the daytime using a sextant only.

03 03 15 52 CC Okay. Real good.

03 03 15 57 CC Okay --

03 03 15 58 SC Get that? Sextant only.

03 03 16 04 CC And, Walt, the question you asked on quad C  
fuel: the readout is 177 pounds. Your omni  
antenna for the burn will be omni B Baker, and  
we would like you to turn the O<sub>2</sub> fans in tank  
2 to OFF.

03 03 16 26 LMP Tank 2 is OFF. 177, I assume that's quad C?

03 03 16 31 CC Quad C, Charlie.

03 03 16 34 LMP Roger. And I've got an antenna B for the burn.

03 03 20 31 CC Apollo 7, Houston. One minute LOS Ascension;  
we'll pick you up at Tananarive in 10 minutes.

03 03 20 37 CDR Roger.  
TANANARIVE (REV 48)

03 03 31 13 CC Apollo 7, Houston through Tananarive.  
Standing by.

03 03 31 17 CDR Roger.

03 03 35 40 CC Apollo 7, 1 minute LOS Tananarive; Carnarvon  
in 8 minutes.  
CARNARVON (REV 48)

03 03 45 02 CC Apollo 7, Houston through Carnarvon.

03 03 45 05 CDR Roger.

03 03 45 07 CC I'll give you a time hack at 2 minutes.

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0 03 03 45 10 CDR Roger. Standing by.

03 03 45 47 CDR The FDAI still five five.

03 03 45 50 CC Okay. Ten seconds to time back. Six, five, four, three, two, one.

03 03 45 59 CC MARK.

03 03 46 01 CC T minus 2 minutes.

03 03 46 03 CDR Speed NORMAL.

03 03 46 04 CMP Key controllers ON.

03 03 46 07 CDR One is ON.

03 03 46 09 CDR Heat controller ON.

03 03 46 10 CMP Limit cycle OFF.

03 03 46 12 CDR Limit cycle OFF.

03 03 46 14 CMP Standing by for 30 seconds.

0 03 03 46 15 CDR Roger.

03 03 47 01 CDR One minute.

03 03 47 27 CDR ...

03 03 47 31 CMP For ... ullage in 15 seconds.

03 03 47 33 CDR Roger.

03 03 47 50 CC Ten, nine, eight, seven, six, five, four, three, two, one, zero.

03 03 48 11 LMP Beautiful cutoff.

03 03 48 15 CDR Gimbal: cut it off one, two, three, and four.

03 03 48 34 CDR Did you pick up that SLA stamping jazz?

03 03 48 38 CC Roger. Copy.

03 03 48 40 CDR Solid as a rock. Jack, are you picking up any residuals?

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03 03 48 43 CC Affirmative. We copy.  
 03 03 48 46 CDR T .3 minus 13.3.  
 03 03 48 49 CC Copy the DELTA-V counter.  
 03 03 48 53 CDR Care if I turn my channels off?  
 03 03 49 59 CDR A and B OFF.  
 03 03 50 07 CDR ... They're OFF. They're OFF.  
 03 03 50 27 CDR ... Stand by.  
 03 03 50 32 CDR Locked and all channels are OFF.  
 03 03 50 35 CC Roger. Copy.  
 03 03 50 38 CDR That's a surprise every time. That thing really  
 slaps us.

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03 03 50 42 CC Roger. I bet.  
 03 03 50 47 LMP Jack, on that SLA stamp: we're getting absolutely  
 no firings at all and 4 degree deadband.  
 03 03 50 55 CC That's what we like to hear. That's good news.  
 03 03 50 57 CDR Yes, that saves a lot of fuel.

GUAM (REV 48)

02 02 57 24 CC Apollo 7, Houston through Guam.  
 03 03 57 26 CDR Roger. We're standing in attitude now.  
 03 03 57 29 CC Roger. That was a real good burn, Wally. We  
 confirmed your orbit on radar, 90 by 160.  
 03 03 57 38 CDR Roger.  
 03 03 57 39 CC And we would like to have you turn your O<sub>2</sub>  
 fans tank 2 to AUTO.  
 03 03 57 48 LMP Done.  
 03 03 57 49 CC Okay. And O<sub>2</sub> fans tank 1 to OFF, and remain  
 in this configuration until ground cue.

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03 03 57 56 LMP Roger. Standing by.

03 03 57 59 CC Okay. After the WSMR radar test which is coming up, we will be ready to power down and set up housekeeping.

03 03 58 06 CDR Roger.

03 04 03 24 CC Apollo 7, Houston. One minute LOS Guam; we pick you up at Hawaii in about 8 minutes.

03 04 03 29 CDR Roger. We have our transponder heater on. We are working into attitude.

03 04 03 36 CC We couldn't copy that, Wally. Say again.

03 04 03 39 CDR Roger. We have the transponder heater on; we are working into attitude.

⊖

03 04 03 42 CC Okay. Real fine. Real fine.

ARIA 3 (REV 48)

03 04 04 40 CF ARIA 3, go REMOTE.

03 04 05 09 CC Apollo 7, Houston through ARIA 3. Standing by.

HAWAII (REV 48)

03 04 11 36 CC Apollo 7, Houston through Hawaii. Standing by.

03 04 11 38 CDR Roger.

03 04 12 51 CC Apollo 7, Houston through Hawaii.

03 04 12 53 CDR Roger.

03 04 12 55 CC You're five-by, Wally. We had a real good look, close look at the SPS data, and it was right down the line. Real good operation.

03 04 13 04 CDR Roger. Sounds like I got a good engine.

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03 04 13 06 CC It sure does.

0 03 04 16 21 CC Apollo 7, Houston. Opposite omni.

03 04 16 37 CDR Apollo 7, Houston. Roger.

03 04 16 38 CC Okay. Wally, on your question on the chlorination: you may delete the chlorination for today. We'll ask you for some later data on the taste of your water as we go along.

03 04 16 53 CDR Roger. I gotta agree with you. Very good. HUNTSVILLE (REV 48)

03 04 17 13 CT Huntsville AOS.

03 04 18 17 CDR Jack.

03 04 18 20 CC All right. Go ahead, Wally.

03 04 18 22 SC If there's a power down, I'd like to leave one of the blue bags there to check our speedup rate during drifting flight.

⊖ 03 04 18 34 CDR I'd like to start drifting flight with our rates almost to zero, and then we'll see how they develop.

03 04 18 42 CC Roger. We concur.

03 04 18 44 CDR We heard a report last night that Lunney said it looked like we were very stable, but that turned out not to be true.

03 04 18 56 CC Which one do you plan to leave on, Wally?

03 04 19 13 CDR ... DSKY lifters, we could get a check on this control board, we're another 2 ... deadband rate high, SCS attitude hold.

⊖ 03 04 19 29 CC Roger. We copy.

03 04 19 31 CDR Roger.

03 04 19 33 CDR ... Got to prepare that square for the GTO.

03 04 22 12 CT ...

03 04 22 32 CT ...

GOLDSTONE through MILA (REV 48)

03 04 25 01 CC Apollo 7, Houston. We should be getting the estimated radar lockon at this time.

03 04 25 08 CDR Roger. We're still reading zero.

03 04 25 13 CC Roger. Still reading zero on the meter.

03 04 25 17 CDR Roger.

03 04 25 18 CDR Tune it just a little bit. It's coming up a little bit now.

03 04 25 30 CC Roger. Understand. The meter is coming up.

03 04 25 31 CDR Roger. Came up about .1. It came up 1 volt.

03 04 25 36 CC Roger. One volt.

03 04 25 37 CDR Good deal, terrific. Then it went down to zero. Yes, 'cause that is about 1.4 volts.

03 04 25 47 CC Roger.

03 04 25 48 CDR It's solid on 1.5. Right at 1.5 volts.

03 04 26 02 CC Roger. Understand. Solid at 1.5.

03 04 26 05 CDR Roger. That's good news. Set on 1.7.

03 04 26 14 CDR Set on 1.7 there.

03 04 26 17 CC Roger.

03 04 26 24 CDR 1.7, almost 1.8.

03 04 26 32 CDR 1.7.

03 04 26 46 CDR It's dropping off now; I think we're making lock.

0 03 04 26 48 CC Roger.

03 04 26 50 CDR She came back up - about 1.6.

03 04 27 22 CDR We're holding lock about 1.4.

03 04 27 31 CDR ... decide to use that radar, setup sure a lot better.

03 04 27 36 CC Okay. ... now.

03 04 27 40 CDR Looks like we beat the Gemini VI, Tom.

03 04 27 42 CC Roger.

03 04 27 52 CDR Still holding lock 1.5. That's pretty spectacular.

03 04 27 55 CC Okay. 1.5.

03 04 27 57 CDR Just dropped off - and she's zero. Tom, I'd say it's a good job. I think it's come to the end of the lock.

0 03 04 28 07 CC Okay. It's back to zero then, Wally?

03 04 28 11 CDR Affirm.

03 04 28 13 CC Okay.

03 04 28 14 CDR Pretty far down the pike by now.

03 04 28 15 CC Yes, you're gonna be cutting across down around Mexico City shortly.

03 04 28 18 CDR Si.

03 04 28 24 CC Okay. As soon as we find out the data, Wally, we'll call it back to you.

03 04 28 28 CDR Okay. I'm sure glad to see you got that one.

03 04 28 31 CC Roger.

0 03 04 28 45 CC Apollo 7, Houston.

03 04 28 47 CDR Go ahead, Tom.

03 04 28 48 CC Roger. White Sands said they got locked on solid, had good data; they had you at 450 miles for 50 seconds.

03 04 28 55 CDR Magnifico! Give them my compliments. You mean they copied it?

03 04 28 59 CC Yes, right - radar sounds pretty good, doesn't it?

03 04 29 03 CDR Great news.

03 04 29 04 CC Good show.

03 04 29 06 CDR ...

03 04 29 08 CC Yes.

03 04 29 17 CDR There's nothing on TV that'll stop me from making the big trip.

03 04 29 20 CC (Laughter)

03 04 29 22 CDR Some kind of small success there.

03 04 29 24 CC Yes, the DTO's are looking pretty good.

03 04 29 27 CDR Roger.

03 04 29 29 CC They sure looked good on that SCS burn, too; that looked tight as the dickens.

03 04 29 33 CDR It looked better to me than the G&N.

03 04 29 36 CC Yes.

03 04 29 38 CDR It was as good, at least.

03 04 29 40 CC Roger. We have yaw 70 degrees at this time.

03 04 29 46 CDR We're going to PAD down shortly so we won't worry about Saturday night ...

0 03 04 29 50 CC Roger. I'll give your regards to MIT.

03 04 29 53 CDR Say again?

03 04 29 57 CMP We'll drop another gimbal on me ...

03 04 29 59 LMP Give them mine, too.

03 04 30 01 CC Okay.

03 04 30 13 CDR Tom, we're planning to power down here; does that jive with your revised?

03 04 30 16 CC That's right; we're going to power down shortly.

03 04 30 19 CDR Okay. We'll leave the B bag up.

03 04 30 21 CC Okay.

GOLDSTONE through MILA (REV 49)

03 04 34 44 CDR Tom, we'd like to go ahead and power down to G&N.

03 04 34 47 CC Say again?

03 04 34 49 CDR - power down to G&N now.

03 04 34 50 CC Okay. We're ready. You can go ahead and power it down.

ANTIGUA (REV 49)

03 04 37 47 CC Apollo 7, Houston.

03 04 37 56 CC Apollo 7, Houston.

03 04 38 26 CC Apollo 7, Houston.

ASCENSION (REV 49)

03 04 50 38 CC Apollo 7, Houston through Ascension.

03 04 50 42 SC Roger.

03 04 50 51 CC Apollo 7, Houston. Your waste quantity is now about 77 percent, and you have a GO to dump at your convenience.

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03 04 50 03 IMP Roger. We will probably wait until it's closer to 90, Ron.

03 04 50 08 CC Roger.  
TANANARIVE (REV 49)

03 05 06 05 CC Apollo 7, Houston. Tananarive standing by.

03 05 06 12 CDR Roger, Tananarive.

03 05 06 13 CC Roger.

03 05 06 24 CMP Good afternoon, Ron.

03 05 06 28 CC Yes, watched the tail end of your burn there, it looked real good.

03 05 06 34 CDR ...

03 05 10 22 CC Apollo 7, Houston. About 1 minute LOS; we'll have your block data at Hawaii.

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GUAM (REV 49)

03 05 32 27 CC Apollo 7, Houston.

03 05 32 32 CDR Loud and clear, Ron.

03 05 32 34 CC Roger. I have your block data in number 9 to give you.

03 05 32 55 CDR Ready to copy.

03 05 32 58 CC Roger. 051 dash 3 Bravo plus 308 plus 1380 080 plus 23 plus 36 2420, 052 dash 3 Bravo plus 308 plus 1380 082 plus 00 plus 15 3731, 053 dash 3 Alfa plus 266 plus 1370 083 plus 36 plus 27 4280, 054 dash Alfa Charlie minus 069, minus 0150 084 plus 22 plus 07 4400.

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03 05 34 39 CDR Are you ready for readback?

0 03 05 34 41 CC Negative. Opposite omni.

03 05 34 53 CC I'll start again with 055 now. 055 dash Alfa Charlie plus 026 minus 0220 085 plus 55 plus 07 3988, 056 dash Alfa Charlie plus 118 minus 0300 087 plus 28 plus 31 3674. Over.

03 05 35 50 CDR Roger. Readback: 051 dash 3 Bravo plus 308 plus 1380 080 plus 23 plus 36 2420, 052 dash 3 Bravo plus 308 plus 1380 082 00 15 3731 053 - 3 Alfa plus 266 plus 1370 083 36 27 4280, 054 Alfa Charlie minus 069 minus 0150 084 22 07 4400, 055 Alfa Charlie plus 026 minus 0220 085 55 07 3988, 056 Alfa Charlie plus 118 minus 0300 087 28 31 3674. Over.

0 03 05 37 01 CC Apollo 7, Houston. Your readback correct.

03 05 37 09 CDR ... Roger, Ron.

03 05 37 17 CC Apollo 7, Houston. Let's check the one on fifty-first rev. The DELTA-V should be 34 20.

03 05 37 29 CDR On 51 3 Bravo.

03 05 37 35 CC Roger. On area 051 3 Bravo.

03 05 37 41 CDR 342 Bravo, 34 20. Roger.

03 05 37 45 CC Roger. Just about LOS. We would like to start battery B charging over Hawaii after we pick up data.

03 05 37 54 CDR Okay.

HAWAII (REV 49)

0 03 05 46 44 CC Apollo 7, Houston through Hawaii.

0 03 05 46 47 LMP Roger.

03 05 46 49 CC Roger. We have data; you can commence batt B charge any time.

03 05 46 56 LMP Roger. Commencing now. Is there anything in particular you're observing there for starting this charge?

03 05 47 11 CC Okay.

03 05 47 14 CC Apollo 7, Houston. We just want to look at the voltage and the current. We would also like to get your onboard reading of the current when you start it up.

03 05 47 26 LMP Roger. It's kind of interesting. The charger is showing DC amps zero.

⊖ 03 05 47 35 CC That is interesting.

03 05 47 36 LMP Not what you expected, is it?

03 05 47 37 CC Not quite.

03 05 47 43 LMP Now that I'm on battery B, it's showing 2.2 amps. Do you read ... 2.2 amps?

05 05 48 07 CC I don't want a keyhole now, Walt. I can't compare it.

03 05 48 10 LMP Say again.

03 05 48 11 CC I don't want a keyhole over Hawaii; we can't compare it. We'll pick up data here shortly.

03 05 48 16 LMP Okay. On 37 volts, 2.25 amps.

03 05 48 20 CC Roger.

⊖ 03 05 50 15 CC Walt, we're showing the 2.18 amps now and 37.4 volts.

HUNTSVILLE through GUAYMAS (REV 49)

03 05 52 06 CT Huntsville, two-wheel log, valid range.  
 03 05 52 52 CC Apollo 7, Houston.  
 03 06 00 31 CC Apollo 7, Houston. About 1 minute to LOS.  
 03 06 00 38 LMP Roger. We ... real production now on interior  
 photography.  
 03 06 00 46 CC Roger.  
 03 06 00 49 LMP We're trying to show just how mobile you can  
 be inside of this thing.  
 03 06 00 53 CC Very good. Walt, for your information there,  
 the cutoff on that charge will be .4 amp or  
 ampere hours replaced.

03 06 01 03 LMP Roger. Understand. Sounds like try to get to  
 4.4 amps first, or ... by batt A, right?

03 06 01 09 CC Roger.

TANANARIVE (REV 50)

03 06 39 13 CC Apollo 7, Houston. Tananarive standing by.  
 03 06 46 22 CC Apollo 7, Houston. One minute LOS.

MERCURY (REV 50)

03 07 02 24 CC Apollo 7, Houston, Mercury.  
 03 07 02 31 CDR Houston, Apollo 7. Do you read?  
 03 07 02 39 CDR Houston, Apollo 7. Over.  
 03 07 02 42 CC Apollo 7, Houston. Roger. We read you, and we  
 request your battery charger current.  
 03 07 02 50 CDR Okay. That can wait. We had a minor problem  
 when we left you awhile ago. We could hear you

call us over Tananarive, but we couldn't raise you. The SPS burn left a large puddle of water on the aft bulkhead. At first, we were very concerned about whether it was water glycol or water. We tasted it; it was water. We checked further and discovered it was underneath the suit bags. Since that time, we mopped it using the water-hose dump system. The water came from the coolant lines that we used to use and the water coolant lines and its condensation. We took a panel off - the small perforators panel - to determine how to work the problem. Houston, Apollo.

03 07 03 51 CC Roger. We copied part of that, I think, Wally. Looks like you've got water on your aft bulkhead, and it came from the water coolant line. I'm not sure of your condition at the present time - if it's still coming in or not.

03 07 04 06 CDR We have it all mopped up. It's condensate water, we're positive. It will probably occur again. We have given a full story on the tape for the dump.

03 07 04 18 CC Roger.

03 07 04 19 CDR ...

03 07 04 26 CC Roger. I understand it's all on the voice tape for the dump, also.

0 03 07 04 33 LMP Right. And the battery charge occurred. I'm showing about .6 amps. Looked to me like it jumped up real fast here and then takes a long time on the plateau.

03 07 04 45 CC Roger. We concur. We're reading .55 now, Walt.

03 07 04 53 LMP Okay. I'll have to expect you keep me posted because I never got below .5 last time, and you got down to about .41.

03 07 05 00 CC Roger. We understand. We're estimating about 10 hours to get down to .41.

03 07 05 05 LMP Okay. Why don't you and the rest of the gang have a drink for us to celebrate Donn and my fifth anniversary in the program today.

0 03 07 05 12 CC Hey, great! By golly, will do.

03 07 05 18 LMP At this rate, I'll be an old man by my second flight.

03 07 05 27 CC Walt, we could also use your service module RCS quantity readings, and then we will correct them for you.

03 07 05 35 LMP Roger. I'll give them to you. We haven't been too concerned with onboard readouts since we're going with your quantities.

03 07 05 44 CC Roger.

03 07 05 46 LMP ... reading ... 54. RCS-B is reading - well, the same as it was. RCS-C is reading 60. RCS-D is reading 65. Over.

0

03 07 06 09 CC Roger. Say again Charlie.

03 07 06 14 LMP Roger. Charlie is reading 60.

03 07 06 18 CC Roger. Fifty-four, nothing or 93, and 60, and 65.

03 07 06 26 LMP Roger. We have it. I think we'd be interested in your quantities for each of our quads.

03 07 06 34 CC Roger. We'll work it out and send it back.

03 07 06 37 LMP And I don't think we ever got a total quantity for our ... I need A numbers to put on my RCS profile as I carry in my checklist.

03 07 06 50 CC Roger. We're working up on all that, and we've got a status coming up to you. It'll be coming up a little later.

0

03 07 06 58 LMP We thank you. And we have our own estimate of the new service module RCS redline. Interesting to see what you guys come up with.

03 07 07 08 CC Roger. Wally, you might like to know that parts of your BIOMED harness has probably become disconnected again. We don't read the heart rate down there.

03 07 07 22 CDR Roger.  
HAWAII (REV 50)

03 07 21 52 CC Apollo 7, Houston. Opposite omni.

03 07 22 14 CC Apollo 7, Houston.

03 07 22 17 LMP Roger. Opposite omni.

03 07 22 24 CC Roger. Walt, we'd like to request O<sub>2</sub> tank 1 fans ON for about 5 minutes now, then OFF.

0

O

03 07 22 35 LMP Roger. Tank 1 fans ON.

03 07 23 02 CC If you get a chance, look down on the ground there. You might be able to see a big fire.

03 07 23 10 LMP Where at?

03 07 23 14 CC I think you may not see it till the next pass; it's over in Hawaii.

03 07 23 19 LMP Roger.

03 07 23 52 LMP You say that big fire is to the west?

03 07 23 58 CC Yes. That's affirmative. We'll try to give you some pointing data for the next pass over.

03 07 24 05 LMP Roger. Thank you.

HUNTSVILLE (REV 50)

O

03 07 28 04 CT Huntsville two-way lock. Downlink weak, too weak for valid range.

03 07 28 59 CT Huntsville two-way lock; valid range.

03 07 29 14 LMP Houston, Apollo 7.

03 07 29 16 CC Houston. Go.

03 07 29 19 LMP Roger. We also just discovered water coming out of our blue hoses, at least the one in the center couch. I haven't checked the other two yet, but we've got quite a bit of visible moisture flowing out of it.

03 07 29 35 CC Roger. Coming out of the blue O<sub>2</sub> hose. Is that what you said?

03 07 29 40 LMP Affirmative. And we've temporarily turned off the suit compressor so we could clean up - clean it up.

C

0 03 07 29 45 CC Roger.

03 07 29 55 CDR The anomaly is going to be a problem here, but  
I can see the solution to the problem.

03 07 30 07 CC Roger.

03 07 31 26 CT Huntsville LOS.  
TANANARIVE (REV 51)

03 08 14 10 CC Apollo 7, Houston.

03 08 14 53 CC Apollo 7, Houston through Tananarive.

03 08 15 00 LMP Roger. We read you five-by, Ron.

03 08 15 03 CC Roger. We sure could use your battery manifold  
pressure, systems test 4A.

03 08 15 11 LMP We read the temperature about a half an hour  
ago when we used it to dump something, and it  
reads 1.4 until you open the vent; and when  
you open the vent, it reads about .5.

03 08 15 22 CC Roger.

03 08 15 27 LMP Did you read? Did you read that, Ron?

03 08 15 34 CC Apollo 7, Houston. Roger. Read 1.4 and 0.5  
when you opened the vent.

03 08 15 40 LMP Roger. And we checked our lithium hydroxide  
canisters. They are dry. We have checked the  
suit circuit water ... and it's functioning in  
AUTO 1 and AUTO 2. It's remaining in AUTO 2.

03 08 15 56 CC Roger. Have you come to any specific point in  
the malfunction procedures?

03 08 16 06 LMP Not yet.

03 08 17 18 CC Apollo 7, Houston.

03 08 17 48 CC Apollo 7, Houston.

03 08 17 52 LMP Go.

03 08 17 54 CC Roger. Looks like our battery charging current is decreasing a little faster than predicted, and we would like your onboard reading.

03 08 18 06 LMP Roger. I am reading .5 amps.

03 08 18 10 CC Roger. .5. We will keep you advised on it.

03 08 18 28 CC Walt, that volcano should be about 30 degrees down and 20 degrees left of local vertical at 80 plus 57.

03 08 18 42 LMP Eighty plus 57 and 30 degrees down and 20 degrees left.

03 08 18 46 CC Roger. ...

03 08 18 49 LMP What?

03 08 18 50 CC Roger. Thirty degrees left, 20 down, and 30 left. No, belay that. Thirty degrees down and 20 left of local vertical.

03 08 19 02 LMP Thirty down and 20 left at 80 hours and 57 minutes.

03 08 19 06 CC Affirmative.

03 08 19 47 CC Apollo 7, Houston. One minute LOS; Mercury at 35.

03 08 19 54 LMP Roger. Mercury 35.  
MERCURY (REV 51)

03 08 36 39 CC Apollo 7, Houston through Mercury.

03 08 36 44 LMP Roger. Loud and clear.

0 03 08 36 48 CC Roger. I have flight plan update for you. One line.

03 08 37 04 LMP Go ahead.

03 08 37 06 CC Roger. Eighty-two plus 00; fuel cell oxygen purge.

03 08 37 20 CDR Roger. We read you, Ron.

03 08 37 23 CC Roger.

03 08 37 27 CDR ... that volcano, was that at 80 57?

03 08 37 42 CC Roger. Volcano time 80 plus 57.

03 08 37 47 CDR Roger.

03 08 38 17 CC Apollo 7, Houston. Based on the trend, it looks like we'll terminate batt B charge, probably over Hawaii.

03 08 38 26 CDR Roger.

0 03 08 38 47 CDR We are still getting water out of our three hoses.

03 08 38 51 CC Roger. I understand.

03 08 39 04 CC Wally, is there any way you can maybe give us an estimate of how much water is coming out there?

03 08 39 10 CDR Ron, the first time we hacked out of there, about a spoonful from the center one, and we were getting about - that's a teaspoonful - we're getting about half of that out of the left one, and just a little moisture out of the right one.

03 08 39 28 CC Roger. Copy.

03 08 40 09 CC Apollo 7, Houston. While we're at it, any estimate on the quantity that was on the bulkhead?

0 03 08 40 16 CDR About a pint. Quite a large amount.

345

O 03 08 40 20 CC Yes, I'd say so.

03 08 41 54 CC Apollo 7, Houston. Request BIOMED to position 3.

03 08 42 00 CDR Roger.

03 08 42 33 CC Thirty seconds LOS; Hawaii at 53.

03 08 42 43 CDR Hawaii 53. What islands are we going by?

03 08 42 54 CC Roger. Be going south of the big islands.

03 08 43 01 CDR Roger.

HAWAII (REV 51)

03 08 54 33 CC Apollo 7, Houston, Hawaii via S-band.

03 08 54 50 CC Apollo 7, Houston. Hawaii M and O VHF for a bit.

03 08 55 08 CC Apollo 7, Houston.

03 08 55 10 LMP Roger.

03 08 55 12 CC Roger. S-band volume up.

O 03 08 55 23 LMP Roger. On S-band.

03 08 55 26 CC Roger. Hawaii M and O VHF OFF now.

03 08 55 40 CC We're standing by this pass.

03 08 55 53 CC Apollo 7, Houston. I recommend terminate battery charging on B.

03 08 56 02 LMP Roger. Terminate. I'd like to get a report from you on how much we have in B, if you get a chance - and also on A.

03 08 56 11 CC Wilco.

03 08 58 16 LMP Roger. Ron, we got a good sweep down the entire chain. The big island itself is pretty well clobered with clouds, and you don't actually see Kilauea.

C

O

03 08 58 27 CC Roger. That's a heck of a note.

03 08 58 33 LMP It's the clearest we've ever seen it out here over Hawaii, though. We've got very nice pictures of the entire chain. We took some movies, but we don't know how good they are.

03 08 59 43 CC Roger.

03 08 59 50 CC Apollo 7, Houston. Thirty seconds LOS; Mercury at 82 plus 10.

03 08 59 56 LMP Roger. Mercury at 82 plus 10.

03 09 00 01 CDR Houston, this is Apollo 7.

03 09 00 06 CC Go.

03 09 00 08 CDR Houston CAP COMM, Apollo 7.

03 09 00 12 CC Say again.

O

03 09 00 15 CDR ...

03 09 00 20 CC Go.

03 09 00 59 CC Apollo 7, Houston. Did you call?

03 09 01 10 CC Apollo 7, Houston.

MERCURY (REV 52)

03 10 11 28 CC Apollo 7, Houston through Mercury.

03 10 11 34 CDR Roger. Ron, read you loud and clear. How me?

03 10 11 37 CC Roger. Loud and clear.

03 10 11 40 CDR When we left Hawaii - -

03 10 11 49 CDR I ended up with a failed switch in the number 2 handcontroller in pitch down. We discovered it in acceleration command. I will troubleshoot it when we get the computer back on the line after we power up.

O

03 10 12 07 CC Roger. A lot of static, Wally; say again.

03 10 12 11 CDR Okay. Over Hawaii, just as we went by the big island, the number 2 handcontroller failed in the pitch-down direction in ACCEL COMMAND and pulsed.

03 10 12 26 CC Roger. Copy.

03 10 12 30 CDR I only got one pulse in pitch down, but I got continual pitch-down command and ACCEL COMMAND. I'd like to try to troubleshoot that. We'll try it in RATE COMMAND. I will troubleshoot that in the computer bulb when we power up.

03 10 12 48 CC Roger.

03 10 12 51 LMP Say, Ron, do you have time to give us a map update?

03 10 12 55 CC Roger. Stand by. I'll get you one.

03 10 12 58 LMP Okay. And have the doctors done any talking down there about the possibility of one or all of us having a cold and stopped up ears on reentry?

03 10 13 12 CC Roger. They've been thinking about it, and they will advise.

03 10 13 16 LMP Okay. We've got something on board here in a medical kit called antibiotic. I was wondering if we ought to be taking it, or what? So far, Wally's, I guess, about holding his own on his ears. Donn may be getting a little bit worse, and I think my ears are still clearing up fairly well.

0 03 10 13 41 CC Roger. I think before antibiotics, they're concerned about temperature. Do you have a temperature? You know, before you go into the antibiotics.

03 10 13 54 LMP We'll start wearing the oral thermometer a little bit and see where we stand, just for the experience.

03 10 14 02 CC Roger.

03 10 14 10 CC 7, Houston.

03 10 14 15 CDR Go ahead.

03 10 14 16 CC Roger. We'd like you to proceed with the waste water dump.

03 10 14 23 CDR Roger.

03 10 14 25 LMP We're reading 80 percent. What do you show?

03 10 14 31 CC Roger. We read 82.9.

03 10 14 35 CDR Roger. We'll dump just after we LOS.

03 10 14 38 CC Roger. And any further water problems out of the hoses there, or any results of the humidity survey?

03 10 14 49 CDR We haven't had any more water coming out the hoses for about the last 40 minutes. The humidity survey indicates that ... water is going to condense out.

03 10 15 02 CC Roger.

03 10 15 04 CDR We'll give you the readings on the last run if we can go ...

03 10 15 11 LMP Roger. Our last humidity reading. Are you ready to copy?

0

03 10 15 13 CC Affirmative.

03 10 15 17 LMP At Wally's suit inlet hose, I'll give you wet then dry, 54/66. The inlet to the cabin heat exchanger 58/68. At the condensate pipe, we had a temperature on the pipe of 52. The wet bulb in the area was 58. The dry bulb in the area was 73. Over by the right-hand window, we had a 68/72. Over.

03 10 15 53 CC Roger. We copy.

03 10 16 16 CC 7, I have your map update.

03 10 16 19 CDR Go.

03 10 16 22 CC REV 52, GET node 81 plus 52 plus 02, longitude 42.4 east, right ascension 05 plus 19.

⊖

03 10 16 46 CDR Roger.

HAWAII (REV 52)

03 10 30 10 CC Apollo 7, Houston. Hawaii standing by.

03 10 30 18 CDR This is Apollo 7.

03 10 30 24 CC Apollo 7, Houston. You're real weak.

03 10 30 27 CDR Roger. Read you loud and clear.

03 10 30 29 CC Roger.

03 10 30 30 CDR - adjust our sleep cycle here. This 5 and 1/2 hours is not too appealing with burn 3 already out of the way.

03 10 30 42 CC Roger.

03 10 30 43 CDR We would like to add an hour and a half to each of our sleep cycles.

○

03 10 30 55 CC Go. May I copy that, Wally?

03 10 30 57 CDR Okay. That will give us each 7 hours. So we'll stay on watch for an hour and a half here and sack it out with Donn tomorrow or later.

03 10 31 06 CC Okay.

03 10 31 08 CDR Very good. What we'll do is just add an hour and a half to each of our sleep schedules.

03 10 31 20 CC So far it looks good down here.

03 10 31 23 CDR Roger.

REDSTONE (REV 52)

03 10 42 46 CC Apollo 7, Houston through Redstone.

03 10 42 50 LMP Roger, Ron.

03 10 42 52 CC Roger.

03 10 42 53 LMP We're standing by for an RCS quantity update.

03 10 42 59 CC Roger. We had it just about all fixed, and then you guys used some over Hawaii. We're working on it.

03 10 43 07 LMP Sorry about that.

03 10 43 09 CC Roger.

03 10 47 23 CC Apollo 7, Houston. Opposite omni.

03 10 48 41 CC Apollo 7, -

03 10 48 48 LMP - update tomorrow afternoon sometime.

03 10 48 52 CC Say again, Walt.

03 10 48 55 LMP Why don't you see if Jack can pass us up a Lima Sierra update tomorrow afternoon sometime.

03 10 49 01 CC Wilco.

03 10 49 07 CDR Ron, it's completely dry underneath the suit bag at this time.

03 10 49 12 CC Roger. That's good to hear that. I was a little curious how it stayed in one place down there.

03 10 49 30 CDR ...

03 10 49 40 CC I missed that. Ascension at 08.

03 10 49 49 CDR ... stuck in there by adhesive.

03 10 49 56 CC Roger. I understand.

03 10 49 58 CDR ... stuck between the two.

ASCENSION (REV 53)

03 11 09 44 CC Apollo 7, Houston through Ascension.

03 11 09 48 CDR Roger. Loud and clear.

03 11 09 50 CC Roger. I have some data for you if you are ready to copy.

03 11 10 03 CDR Go ahead.

03 11 10 05 CC Roger. Your total usable service module RCS fuel is quad A 48 percent, Bravo 57 percent, Charlie 48 percent, and Delta 57 percent.

03 11 10 31 CDR What does that all total up to in pounds, Ron? Do you have that?

03 11 10 34 CC Roger. For your chart update, it's 687 pounds at 83 hours. I have your new redlines if you'd like those also.

03 11 10 48 LMP Forty-eight percent usable - that's a number I have - I'm not sure that is - how much do I have in that quad that's usable?

0

03 11 11 05 CC Walt, say again.

03 11 11 07 CDR ...

03 11 11 12 LMP We also have to switch at 43 percent, and I don't think it's 43 percent usable. It's 43 percent - -

03 11 11 27 CC Apollo 7, Houston. Are you saying when to switch to secondaries?

03 11 11 32 CDR Negative.

03 11 11 34 LMP We switched to secondaries at 43 percent, and I need to know an absolute percent in the quad - not a percent usable - if you have that number.

03 11 11 47 CC Roger. We'll get it for you.

03 11 11 50 LMP And the number for the chart you said was 683?

0

03 11 11 54 CC 687.

03 11 11 57 LMP 687. Thank you.

03 11 12 05 CC And I have your battery totals.

03 11 12 10 LMP Go ahead with the battery.

03 11 12 12 CC Roger. Batt A 33.2, batt B 30.8, batt C 39.5.

03 11 12 28 LMP Roger. You're getting low, low there. I hope you are still considering a different chart sometime, around six or so.

03 11 12 39 CC Roger. Walt, we're still evaluating this. We're working very closely with the manufacturer, and we should have some information probably sometime tomorrow.

03 11 12 51 LMP Roger. Thank you, Ron.

0

03 11 12 55 CC And he advised the voice quality of the DSE is still good.

0 03 11 13 01 LMP Roger. Understand. Thank you. Were you giving me usable or a number to go on my chart when you gave me the chart update?

03 11 13 09 CC The chart update is what you go on the chart with on the poundage. The percentage was the total usable, as calculated on the ground, not a correction factor for your gages.

03 11 13 22 LMP Roger. Our chart includes 58 pounds unusable. Do we add that to the number you gave, or did you give us the number for the ordinate there?

03 11 13 32 CC The number for the ordinate.

03 11 14 54 CC Apollo 7, Houston. We're reading about 84 percent on the waste water to quantity. Just about LOS now.

03 11 15 02 LMP Roger. We are going to commence dumping in 5 minutes.

03 11 15 06 CC Roger. We will pick you up at Mercury at 44.

03 11 15 22 CDR ...

03 11 15 27 CC Say again, Wally.

03 11 15 32 CDR The last number we had was 808; looks like I missed 20 pounds less than 4.3.

03 11 15 47 CC Roger. I understand.  
MERCURY (REV 53)

03 11 45 29 CC Apollo 7, Houston through Mercury. Standing by.

03 11 47 22 CC Apollo 7, Houston through Mercury. Standing by.

03 11 47 28 LMP Roger. We read you loud and clear.

O

03 11 47 30 CC Roger. Same here.  
 GUAM (REV 53)

03 11 54 40 CC Apollo 7, Houston. One minute till LOS; Redstone  
 at 15.

03 11 54 46 LMP Roger. We're just breaking down now, and we'll  
 be changing crews. Wally and I are getting off  
 here.

03 11 54 56 CC Roger.

03 11 54 57 LMP We get off here.

03 11 55 01 CC Say again, Walt.

03 11 55 03 LMP I was just repeating we get off here.  
 REDSTONE (REV 53)

03 12 16 15 CC Apollo 7, Houston through Redstone.

03 12 17 46 CC Apollo 7, Redstone. Standing by.

03 12 17 53 CMP Roger. Ron.

03 12 17 55 CC Hey, good morning.

03 12 17 57 CMP How are you?

03 12 17 59 CC Getting along great. Yourself?

03 12 18 03 CMP Oh, just fine; I just got up. Had a good night's  
 rest. Wally and Walt are sacking out now.

03 12 18 08 CC Okay. Good.

03 12 19 27 CC Apollo 7, Houston.

03 12 19 30 CMP Go, Ron.

03 12 19 32 CC Roger. We want to cycle the O<sub>2</sub> tank 1 fans at  
 this time. Turn them on and -- for 5 minutes  
 and then off.

O

O

0 03 12 19 44 CMP Roger. I've got 1 ON at the moment; 2 OFF. You want me to turn 2 on for a bit?

03 12 19 52 CC Negative. We thought O<sub>2</sub> tank 1 fan was OFF. We would like to turn on tank 1 fan at this time.

03 12 20 05 CMP Okay. Well, they're just the other way around.

03 12 20 10 CC Okay. Stand by, then.

03 12 20 34 CC Okay. Donn, let's go ahead and cycle tank 2 fans ON for 5 minutes and then OFF.

03 12 20 41 CMP Roger. We've got a couple of reports for you.

03 12 20 45 CC Roger. Go.

03 12 20 46 CMP Roger. We had canister change number 7, at around 82 30, and we - Wally and Walt - checked the command module RCS temperatures at around 83 hours, and they were all 5 volts. All except 6A, and that was 4.9.

0 03 12 21 08 CC Roger. Copy.

03 12 21 23 CMP Ron, we have a number of 687 pounds RCS. Now is that total, or is that just the usable?

03 12 21 38 CC Donn, that is usable propellant.

03 12 21 42 CMP Okay. So I can add - for our chart up here, I can add the 58 pounds that we've got included in it?

03 12 21 55 CC That's affirmative. You can.

03 12 22 00 CMP Roger. In the future, when you give us the totals, would you please have the usable added in because that's what we plotting on this little card we've got.

C

0 03 12 22 09 CC Roger. You want the ordinate when I give you the update. Is that correct?

03 12 22 15 CMP Roger.

03 12 22 22 CMP That makes us feel better. We wondered what happened to all the fuel all of a sudden.

03 12 22 25 CC Okay.

03 12 22 40 CC Donn, I want to make sure you save three of your decongestants for use prior to reentry.

03 12 22 52 CMP Roger. We got you on that.

03 12 22 54 CC Roger.

03 12 23 15 CC I've got about 1 minute to LOS, Donn.

03 12 23 24 CMP Understand.

03 12 23 27 CC You might be interested to know that the little TV yesterday morning was much, much better than any ground testing I had ever seen.

03 12 23 38 CMP Is that right? Boy, that's great! Did you see it on the commercial?

03 12 23 40 CC That's affirmative, and it was really great.

03 12 23 43 CMP Outstanding.

ASCENSION (REV 54)

03 12 42 23 CC Apollo 7, Houston. Ascension standing by.

03 12 43 58 CC Apollo 7, Houston. Opposite omni.

03 12 44 05 CMP Roger.

03 12 49 32 CC Apollo 7, Houston. One minute LOS; Mercury at 18.

0

0

MERCURY (REV 54)

0

03 13 18 45 CC Apollo 7, Houston.  
 03 13 18 52 CMP Houston, Apollo 7.  
 03 13 18 54 CC Roger. Apollo 7, Houston. Acquisition Mercury.  
 I would like to brief you on a USB test. It  
 involves a couple of switches.

03 13 19 05 CMP Okay. Go ahead.

03 13 19 07 CC Roger. Just about time LOS Mercury, we would  
 like power TMP to AUX and the S-band volume up  
 for that Guam pass; and this will be at about  
 25 minutes, 85 hours and 25 minutes.

03 13 19 28 CMP Okay. Will do. You want power TMP to AUX and  
 S-band volume up?

0

03 13 19 34 CC Right. And if the test doesn't work out, I will  
 try and come back on VHF. Otherwise, at LOS Guam,  
 you can put the power TMP back to NORMAL.

03 13 19 43 CMP Roger. Understand.

03 13 19 45 CC Roger.

03 13 21 48 CC Apollo 7, Houston. We would like power TMP to  
 AUX any time now.

03 13 21 55 CMP Roger.

03 13 22 26 CMP Houston, Apollo 7.

03 13 22 28 CC Go.

03 13 22 30 CMP Roger. Would you confirm the H<sub>2</sub> fuel cell purge  
 that is in the flight plan?

0

03 13 22 37 CC Stand by.

O

03 13 22 46 CC Apollo 7, Houston. Negative. We are updating that real time. You can disregard that entry.

03 13 22 54 CMP Roger. That is what I thought; the heaters are off. I've got a couple of reports I would like to make.

03 13 23 00 CC Go.

03 13 23 02 CMP Okay. When Wally went to sleep, which was about 84 hours, he took two aspirins and 20 clicks of water; and when I went to sleep about 77 hours, I took two aspirins and an Actifed and 20 clicks of water.

03 13 23 22 CC Roger. Understand. Wally at 84 hours: two aspirins and 20 clicks. Donn at 77 hours: two aspirins, one Actifed, and 20 clicks.

O

03 13 23 31 CMP That is affirmative.

GUAM (REV 54)

03 13 27 31 CC Thank you.

03 13 27 32 CC Apollo 7, Houston. I'll have a block data at Redstone.

03 13 27 36 CMP Roger. Understand. Block data at Redstone.

03 13 27 39 CC Roger.

03 13 29 52 CC Apollo 7, Houston. One minute LOS Guam; Redstone at 50.

03 13 29 58 CMP Roger. Understand.

REDSTONE (REV 54)

O

03 13 50 13 CC Apollo 7, Houston.

03 13 50 16 CMP Houston, Apollo 7. Go.

03 13 50 18 CC Roger. I have a block data when you are ready to copy.

03 13 51 22 CMP Go ahead, Bill.

03 13 51 23 CC Roger. Before I start, we would like to confirm the TMP power back to NORMAL.

03 13 51 44 CMP Roger. It is NORMAL.

03 13 51 45 CC Okay. Block data, starting to read: 057 dash 2 Alfa plus 242 minus 0270 089 0620 3382, 58 dash 1 Charlie plus 200 minus 0600 090 3041 3332, 059 dash 1 Alfa plus 270 minus 0640 092 0654 3349, 060 dash 1 Alfa plus 310 minus 0644 093 4329 3409, 061 dash 1 Alfa plus 306 minus 0645 095 2000 3659, 062 dash 1 Alfa plus 254 minus 0640 096 5238 2888. Read back, please.

03 13 54 39 CMP Roger. 57 dash 2 Alfa plus 242 minus 0270 089 0620 3382, 058 dash 1 Charlie plus 200 minus 0600 090 3041 3332, 059 dash 1 Alfa plus 270 minus 0640 092 0654 3349, 060 dash 1 Alfa plus 310 minus 0644 093 4329 3409, 061 dash 1 Alfa plus 306 minus 0645 095 2000 3659, 062 dash 1 Alfa plus 254 minus 0640 096 5238 2888.

03 13 55 50 CC Readback is correct.

03 13 55 54 CMP Roger.

03 13 56 16 CC Apollo 7, Houston. We are still showing real time on SM, and would you check TMP power NORMAL again?

O 03 13 56 29 CMP Oh. Roger. I got it now.

03 13 56 34 CC Roger.

03 13 57 40 CC Apollo 7, Houston. One minute LOS Redstone;  
Ascension at 17.

03 13 57 49 CMP Roger. Houston.  
ASCENSION (REV 55)

03 14 18 02 CC Apollo 7, Houston. Acquisition Ascension.  
Standing by.

03 14 18 30 CC Apollo 7, Houston. Acquisition Ascension.  
Standing by.

03 14 18 36 CMP Roger. You're very garbled, Houston.

03 14 18 39 CC Roger. Understand.

03 14 22 18 CC Apollo 7, Houston. Coming up on LOS Mercury  
at 53.  
MERCURY (REV 55)

03 14 55 13 CC Apollo 7, Houston. Acquisition Mercury standing  
by.

03 14 55 19 CMP Roger. Houston, Apollo 7.

03 14 55 28 CMP Bill, could you get me the static vent update  
for our orbital map?

03 14 55 32 CC Stand by.

03 14 56 16 CC Apollo 7, Houston. The GET for the nodal cross-  
ing is 84 plus 49 plus 48.

03 14 56 35 CMP Roger. Understand. 84 plus 49 plus 48.

03 14 56 39 CC Right. And it will be 3.1 west - -

C 03 14 56 46 CMP Roger. Thank you.

0 03 14 56 51 CC -- and it is REV 54.

03 14 57 01 CMP Roger.

03 14 57 02 CC Okay.

GUAM (REV 55)

03 15 00 00 CC Apollo 7, Houston. Acquisition Guam. I will have a flight plan update at Redstone, and it has several items.

03 15 00 10 CMP Roger. Understand.

REDSTONE (REV 55)

03 15 24 29 CC Apollo 7, Houston.

03 15 24 33 CMP Houston, stand by one. I'll be with you in 1 minute.

03 15 25 52 CMP Houston ...

03 15 25 55 CC Apollo 7, Houston.

03 15 25 59 CMP Roger. Houston, Apollo 7. Go.

03 15 26 01 CC Roger. Donn, I have a rather extensive flight plan update; and what I'd like for you to do is just follow me with the flight plan, and we'll go through here from about 88 hours right on through up to 100 hours.

03 15 26 34 CC Apollo 7, Houston. Opposite omni.

03 15 28 48 CC Apollo 7, Houston. Just let me know when you're ready to copy.

03 15 29 09 CMP Roger. Go ahead, Bill. I'm ready.

03 15 29 11 CC Donn, do you have the flight plan there?

03 15 29 16 CMP Roger.

O 03 15 29 17 CC Okay.

03 15 29 18 CMP Roger. I've got it right in front of me.

03 15 29 20 CC Right. Good. Because I didn't want you to have to write it on anything else. At 88 hours, delete the reference to P30.

03 15 29 32 CMP Roger.

03 15 29 33 CC Okay. Now on the next half of the page, from 88 to 90, you can delete everything on that page, and there'll be two additions so you can just draw a line through all of those if you want.

03 15 29 49 CMP Should be what?

03 15 29 51 CC We'll delete, cancel all the actions listed from 88 hours to 90 hours.

O 03 15 29 58 CMP Right. I got that.

03 14 30 00 CC Okay. At 89 hours, there'll be a CMC power up, program 5.

03 15 30 09 CMP What time?

03 15 30 11 CC 89 plus 00.

03 15 30 15 CMP Roger. 89 hours power up?

03 15 30 17 CC Roger. At 89 plus 30, you'll get an update for RAD degradation test; that'll be a state vector and time of ignition.

03 15 30 53 CC Okay. Are you ready for 90 hours?

03 15 31 00 CMP Bill, you're cutting in and out. I'm only getting about half of this.

C 03 14 31 03 CC Okay. I'll say again. Did you get those two additions? Did you get the one at --

O 03 15 31 13 CMP Negative. All I got was delete everything from 88 through 90 and then power up at 89.

03 15 31 19 CC Roger. Okay. At 89 plus 30, there will be an update for radiator degradation.

03 15 31 29 CMP Just a minute.

03 15 31 36 CC Okay. At - are you still reading?

03 15 31 42 CMP Roger. You want the whole G&N up at that time or just the computer?

03 15 31 47 CC Well, let's see. Right, that's correct, that's a complete power up at 89 hours.

03 15 31 56 LMP Okay.

03 15 32 02 CC And at 89 plus 30, the update will be for the radiator degradation test. Starting at 90 hours, you can delete everything on that page.

⊖ 03 15 32 21 CMP Roger.

03 15 32 23 CC And at 90 hours and about 10 minutes, you can put in there P51.

03 15 32 35 CMP Roger.

03 15 32 36 CC At 91 hours and 42 minutes, a P52.

03 15 32 48 CMP Wait a minute; 91 hours is in the daytime.

03 15 32 52 CC 91 42. Donn, we're getting ready for LOS here. I'll talk to you at Antigua.

CANARY (REV 56)

03 15 54 57 CC Apollo 7, Houston.

03 15 55 11 CC Apollo 7, Houston. Acquisition Canary.

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0 03 15 55 32 CC Apollo 7, Houston. We'd like to continue with the flight plan update when you're ready.

03 15 55 47 CMP Roger. Go ahead, Bill.

03 15 55 50 CC Roger. I think we were talking about 91 hours and 42 minutes, a P52, and you were questioning nighttime; and the nighttime is starting to move back a little bit because of the change in the orbit, and that should be all right just after sunset.

03 15 56 12 CMP Roger. I didn't get the minutes on that: 91 42 for a P52?

03 15 56 16 CC Roger. That's right: 91 plus 42. Okay. On the second column of page 2-36, starting at 92 hours: at 92 25 23, we have an MCC update. You can scratch through everything except the GO/NO-GO. And at 92 plus 35, add "Initiate radiator degradation test".

03 15 57 03 CMP Roger. Say again that time for that.

03 15 57 06 CC 92 plus 35.

03 15 57 20 CMP Okay. Got it.

03 15 57 22 CC Right. You can delete the P30 - all the references to preparation for the burn, of course; you can delete those. At 93 plus 15, add "H<sub>2</sub> strat test (percent)" is what they'll estimate you have at that time.

03 15 57 49 CC So that will be at 93 plus 15, H<sub>2</sub> strat test (60 percent).

0 03 15 57 59 CMP Roger. Got it.

03 15 58 02 CC And the canister change does stay in.

03 15 58 08 CMP Okay.

03 15 58 09 CC At 94 hours, fuel cell O<sub>2</sub> purge.

03 15 58 31 CMP Okay.

03 15 58 33 CC Next page. 94 hours plus 30, unstow and set up TV.

03 15 58 45 CMP Roger.

03 15 58 47 CC And, of course, the - you can delete the items in there about the radiator degradation test and H<sub>2</sub> heaters ON at 95 hours.

03 15 58 59 CMP Okay.

03 15 59 01 CC At 95 plus 25, TV ON. That will be at Texas AOS; 95 plus 25, TV ON.

03 15 59 22 CMP Roger. I got you.

03 15 59 24 CC Okay. On the next column, at 96 plus 40, delete the reference to the ECS radiator degradation test.

03 15 59 39 CMP Roger.

03 15 59 40 CC At 97 hours, add "End radiator degradation test". You will have started it up about 92 35.

03 15 59 57 CMP Okay.

03 15 59 59 CC Also, at 97 hours, you'll receive update for scanning telescope star count. That'll be at 97 hours, update SCT star count.

03 16 00 22 CMP Okay.

0 03 16 00 25 CC And for that, the sun line of sight (LOS) will be 70 degrees.

03 16 00 39 CMP Roger.

03 16 00 40 CC At 97 plus 40, program 52.

03 16 00 52 CMP Roger. Is that option 3?

03 16 00 55 CC Stand by. Be at C align time. At 98 hours, the test - the SCT star count will be performed.

03 16 01 20 CMP At what time?

03 16 01 21 CC 98 hours.

03 16 01 25 CMP 98 even?

03 16 01 26 CC Affirmative.

03 16 01 30 CMP I don't understand that. That's right in the middle of the night pass, isn't it?

⊖ 03 16 01 36 CC Roger. And it continues into the day.

03 16 01 45 CMP ... that's going to be a little hard to - you going to realign at 97 40 and then do the test at - -

03 16 01 52 CC Roger. Just on the further edge of LOS. If you read, that is affirmative.

03 16 01 58 CMP Roger.  
REDSTONE (REV 56)

03 16 58 13 CC Apollo 7, Houston.

03 16 58 16 CMP Roger, Houston. Go.

03 16 58 18 CC Roger. Acquisition Redstone. I have one final item here on the flight plan update.

⊖ 03 16 58 31 CMP Ready to go.

03 16 58 34 CC Roger. At 99 plus 30, we will have a G&N, N and SCS power down.

03 16 58 45 CMP Roger.

03 17 06 05 CC Apollo 7, Houston. One minute LOS Redstone; Antigua at 17. And when we come up on Antigua, we would like for you to be in POO. We'll have a state vector for you at that time.

ANTIGUA (REV 57)

03 17 18 00 CC Apollo 7, Houston.

03 17 18 07 CMP Roger. Go.

03 17 18 08 CC Roger. We have a state vector to send to you if you could go to POO, please.

03 17 18 16 CMP Stand by one.

03 17 19 10 CC Apollo 7, Houston. If you don't get your computer up here, it's all right. We can give this to you at Canary, but I do have a NAV check I can give you when you're ready to copy it.

03 17 19 22 CMP Roger. Stand by. I'm still on a 51 here.

03 17 19 26 CC Okay.

03 17 20 49 CMP ... Houston, Apollo 7.

03 17 20 50 CC Go.

03 17 20 52 CMP Roger. I'll take that update now if you can send it up.

03 17 20 54 CC Roger.

03 17 20 56 CMP Go to ACCEPT if you want to uplink.

03 17 20 58 CC Roger.

0 03 17 21 15 CC And, Donn, while it's coming up, I have a NAV check here when you're ready to copy.

03 17 21 21 CMP Roger.

03 17 21 46 CMP Go ahead with your NAV check, Bill.

03 17 21 48 CC Roger. 092 05 0000 minus 1796 minus 14661 1566. Read back.

03 17 22 18 CMP Roger. 092 05 0000 minus 1796 minus 14661 1566.

03 17 22 29 CC Readback is correct.

03 17 23 15 CC Apollo 7, Houston. About 1 minute LOS Antigua.

03 17 23 21 CMP Roger.

03 17 23 22 CC And it will be Canary at 28.

03 17 23 24 CMP Roger.

CANARY (REV 57)

0 03 17 28 08 CC Apollo 7, Houston.

03 17 28 12 CMP Apollo 7. Go.

03 17 28 14 CC Roger. We would like for you to cycle the - stand by.

03 17 28 52 CC Apollo 7, Houston. Which of your O<sub>2</sub> tank fans is OFF?

03 17 28 58 CMP Number 2 is OFF.

03 17 28 59 CC Number 2 is OFF. Roger. That's what we thought.

03 17 29 55 CC Apollo 7, Houston. We are through with the computer.

03 17 29 58 CMP Roger.

03 17 32 37 CC Apollo 7, Houston. We'd like for you to cycle your O<sub>2</sub> tank 2 fans ON for 5 minutes, then OFF.

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O 03 17 32 49 CMP Roger.

03 17 34 51 CC Apollo 7, Houston. One minute IOS Canary;  
Carnarvon at 05. Just for a time hack, you can  
turn those fans back off about 38.

03 17 35 06 CMP Roger.  
CARNARVON (REV 57)

03 18 05 30 CC Apollo 7, Houston.

03 18 05 34 CMP Houston, Apollo 7. Go.

03 18 05 36 CC Roger. Acquisition Carnarvon. Standing by.

03 18 05 40 CMP Roger.

03 18 05 43 CC Donn, I noticed you were going through the mal-  
function procedure there - appeared to be just  
about the time we were losing you at Canary.  
Did you find out anything in that?

03 18 05 54 CMP Roger. I found out whatever it was went away,  
I think, at least up to now.

03 18 06 03 CC Whatever it was went away, huh?

03 18 06 06 CMP Right.

03 18 06 13 CC Did you arrive at that just from going through  
this malfunction procedure? Is that how you did  
that?

03 18 06 19 CMP Well, not totally.

03 18 06 21 CC Okay. Disregard.

03 18 06 23 CMP Wait until Wally gets up here. He may want to  
do it again.

C 03 18 06 26 CC Okay.

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## HONEYSUCKLE (REV 57)

03 18 18 42 CC Apollo 7, Houston. One minute LOS Honeysuckle;  
Redstone at 32.

## REDSTONE (REV 57)

03 18 32 52 CC Apollo 7, Houston. Acquisition Redstone. Stand-  
ing by.

03 18 39 15 CC Apollo 7, Houston. One minute LOS Redstone;  
Antigua at 50.

03 18 39 24 LMP Apollo 7. Roger.

03 18 39 28 CDR I gather you were in kind of a hurry to get us  
to work down there today.

03 18 39 34 CC We have a few things. Roger.

03 18 39 41 CDR I suggest somebody for tomorrow get to work on  
the sleep plan. You've cut us out of an hour's  
sleep already.

03 18 39 49 CC Roger.

03 18 39 55 CDR And three have colds. I asked for an hour and  
a half sleep for each of us last night, and that  
apparently was ignored.

03 18 40 28 CDR Houston, Apollo 7.

03 18 40 30 CC Roger. Go. We're just about to LOS.

## ANTIGUA (REV 58)

03 18 51 11 CC Apollo 7, Houston.

03 18 51 19 CMP Houston, Apollo 7.

03 18 51 21 CC Roger. I just checked in the flight plan here  
regarding Wally's query there over Redstone, and

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I didn't get all of it, but it was something about the sleep cycle being shortened. And when I came on, the time line showed the commander's and LMP's sleep cycle extended to 91 hours. Is that the way you understood it?

03 18 51 45      CMP      That's affirmative. But you did have ... some-one moved up the radiator test right in the middle of it.

03 18 52 01      CMP      We got the radiator test initiated at 92 30. Right?

03 18 52 07      CC      Roger. Stand by.

03 18 52 10      CMP      We're just gonna have to put on our headsets and go to work up here.

03 18 52 27      CC      Apollo 7, Houston. We acknowledge the error on the ground here.

03 18 52 32      CDR      Okay. Let's have the ground get to work and look at the sleep/rest cycles. We had to initiate the request as it was to get only 5 hours per shift sleep scheduled this last night. I asked for an extension and got it. I want the rest of these work periods worked out now. Apparently, we can move up burn 3. How about giving us a chance to get some sleep?

03 18 52 55      CC      Apollo 7, Houston. Understand.

03 18 53 04      LMP      Houston, Apollo 7.

03 18 53 05      CC      Go.

0 03 18 53 08 LMP Roger. Bill, can you check - I think I'd like to go ahead and try to activate our primary water boiler before we commence the radiator degradation test. And then if the - we have any problems while doing the radiator degradation test, such as our primary water boiler goes down, find out if it's okay to activate the secondary loop with the radiator bypass. Over.

03 18 53 33 CC Roger. Stand by.

03 18 54 02 CC Roger. Walt, I have something here, and I think it's pretty close to what you said. I'll go through a recommended procedure here.

03 18 54 10 LMP Okay. Is it something I have to write down or not?

03 18 54 12 CC No. Why don't you listen to it first? I think it's just what you wanted there.

03 18 54 16 LMP Go ahead.

03 18 54 19 CC Step 1, prior to test, reservice evaporator, if not already reserviced. Step 2, begin the actual test. Three, activate primary evaporator in AUTO mode. Four, if evaporator dries out, close back pressure control valve and wait 15 minutes. Five, then reservice evaporator and reactivate in AUTO mode. Six, if evaporator dries out again, close back pressure control valve and shut down evaporator. Seven, continue test. Eight, if evaporator

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out count exceeds 80 degrees Fahrenheit, activate secondary loop with radiators bypassed and continue test.

03 18 55 14 LMP Only one question with that. The 80 degrees Fahrenheit - the rule in the past has been activate secondary loop if the temperature of the glycol evaporator outlet exceeded 60. Can you confirm that?

03 18 55 26 CC Stand by.

03 18 56 29 CC Apollo 7, Houston. Regarding the 80-degree count, they say they are willing to go that high. If you activate the secondary lower than that, it compromises the test. I said that I thought that we ought to go ahead and look at working it at 60, and they're checking into it.

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03 18 56 50 LMP Okay. Understand. I don't think there's any great big problem with letting it go a little higher, Ron. I think we've got a good chance of not having to activate it anyway, but that's just a conjecture now.

03 18 57 00 CC Okay.

03 18 57 01 LMP Bill, I mean, sorry.

03 18 58 03 CC Apollo 7, Houston.

03 18 58 07 LMP Roger. Go ahead, Bill.

03 18 58 08 CC Hey, Walt, I have a DSE recording plan for this radiator degradation test, and I'd like to pass

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it to you over Canary at a time that it would be convenient.

03 18 58 23 CC It has to do with leaving it in high bit rate for portions of the test.

CANARY (REV 58)

03 19 03 23 CC Apollo 7, Houston.

03 19 03 25 LMP Roger, Houston. Go ahead.

03 19 03 27 CC Roger. Acquisition Canary.

03 19 03 31 LMP Roger. Did the O<sub>2</sub> partial pressure this morning about - almost 33 minutes ago was 240mm of Mercury. Ready to copy your recording update.

03 19 03 45 CC Roger.

03 19 03 47 CDR Houston, Apollo 7.

03 19 03 48 CC Go.

03 19 03 52 CDR Houston, Apollo 7.

03 19 03 53 CC Apollo 7, Houston. Go.

03 19 03 56 CDR Roger. We can now report that the handcontroller is GO.

03 19 04 01 CC Roger. Handcontrol is GO.

03 19 04 03 CDR That's affirmative. The anomaly has disappeared, and I'm quite surprised you all weren't somewhat concerned about that; that wiped out our hybrid deorbit for awhile.

03 19 04 15 CC We were concerned.

03 19 04 18 CDR You'll have to clear some time for me before I get a critical test.

0 03 19 04 20 CC Roger. There was quite a lot of concern down here.

03 19 04 24 CDR Roger. Well, it takes awhile to check those things out.

03 19 04 28 CC Roger. Also - -

03 19 04 30 LMP Let's go.

03 19 04 32 CC Okay. On the DSE recording for radiator degradation test, I'll read a few comments first. For radiator degradation test, spacecraft will be left in high bit rate. Spacecraft COMM system will be set up for high bit rate record by command. At the following time, place the tape recorder forward switch to FORWARD for 3 minutes, then to OFF. Ready to copy times? At 92 plus 57, 93 plus 37, 94 plus 29, 95 plus 08, 96 plus 01, 96 plus 33. Comment: do not use up telemetry command RESET switch during radiator degradation test. Note: you can only record voice while tape is running as scheduled above.

03 19 06 05 LMP Okay. I've got the time in, and I'd like you to repeat the last comment. The attention is to - I assume you people are going to rewind and leave us with a fresh roll of tape to start with? And, we'll put it to FORWARD; I also assume you were going to leave it with my command here, and I'll have to hit COMMAND RESET switch

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at the start of test. I will go to FORWARD for 3 minutes and then to OFF at the following times: 92 plus 57, 93 plus 57, 94 plus 29, 95 plus 08, 96 plus 01, 96 plus 33. Over.

03 19 06 41 CC Roger. The second time was 93 plus 37, and also you do not go to COMMAND RESET.

03 19 06 55 LMP Okay. Understand you are going to have everything set up, and all I will use is tape recorder motion switch going to FORWARD at those times.

03 19 07 04 CC That's affirmative.

03 19 07 07 LMP And we can record at the time the tape is running. Was there anything else in that last comment?

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03 19 07 12 CC Negative. That's correct. You can only record voice while tape is running as scheduled at these times, and you did get - -

03 19 07 21 LMP Roger. And I assume you got a plan to dump all that out and give us a fresh tape as soon as possible afterwards. Did you read my comment that, at 91 hours into the flight, O<sub>2</sub> partial pressure was 240mm of Mercury?

03 19 07 36 CC Roger. At 91 hours, O<sub>2</sub> partial pressure 240mm. Also, we're setting up for a 10-hour sleep cycle for tonight.

03 19 07 49 LMP Ten hours is - How about eight?

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0 03 19 07 53 CDR Bill, we can't do that, sleep five one time and ten the next. Try to get nearer an average of eight. We'll go for eight tonight, and that will be plenty.

03 19 08 02 CC Okay.  
CARNARVON (REV 58)

03 19 37 34 CC Apollo 7, Houston. Acquisition Carnarvon.

03 19 37 41 CMP Roger, Houston.

03 19 37 46 CC Apollo 7. I have a couple of items. First, in reference to the secondary loop activation during the radiator tests, we have confirmed that 80 degrees EVAP OUT TEMP is an acceptable hardware limit. However, secondary loop may be activated before 80 degrees Fahrenheit as physical comfort dictates. Two, in reference to the handcontroller anomaly, we would like to know which check or test did you use to verify the acceptable performance?

03 19 38 26 CMP Roger. We used the standard malfunction procedure starting with the CMC troubleshooting technique. If the thing passed that test, then we went on with the rest of it - it's on page 15 - page - it's item 2, page 14 - and the final was the time itself in there where the anomaly occurred. It did not occur there again.

03 19 38 51 CC Roger.

03 19 38 52      CMP      ... zero.

03 19 39 03      CMP      And there was a discrepancy with the malfunction  
... only implied. This is the failure where the  
controls are stuck ON. Where the malfunction oc-  
curs, the function will not occur.

03 19 39 20      CC      Roger.

03 19 38 22      CMP      And in that same case, the final two digits on  
number 1 register of the DSKY would be 75 for  
pitch down. If the thing was stuck on 75, it  
saw immediately; it could not show.

03 19 39 36      CC      Roger.

03 19 39 39      CMP      And, Bill, do you want me to follow the pro-  
cedure that was passed up the first time we re-  
activated the primary water boiler? I had  
several steps here. I think you were probably  
there when you passed it up even.

03 19 39 53      CC      Stand by on that.

03 19 39 56      CMP      Do you recall the one?

03 19 39 59      CC      Yes, we know; we want to confirm.

03 19 40 09      CMP      And when you get it, we can use a chart update,  
please.

03 19 40 13      CC      Roger.

03 19 40 53      CC      Apollo 7, Houston. I have a chart update.

03 19 40 57      CMP      Go.

03 19 40 58      CC      Live 57 node at 89 plus 16 plus 24, 71.4 degrees  
west.

0 03 19 41 17 CMP Roger.

03 19 41 18 CC Okay.

03 19 41 33 CC Apollo 7, Houston. Yes, we would like for you to activate it just as you did yesterday.

03 19 41 41 CMP Okay. And if it checks down, you want to wait 15 minutes again, right?

03 19 41 48 CC Affirmative.

03 19 41 50 CMP All right. Just for my own information, what is a 15-minute wait, if it shuts down like that?

03 19 41 58 CC Stand by.

03 19 42 05 CC Apollo 7, Houston. We will get that answer. It will take a few minutes.

03 19 42 10 CMP Okay. Thanks, but you understand I just wondered why we wait 15 minutes before we try to reservice the thing. I don't quite understand it.

03 19 42 19 CC Okay.

03 19 43 17 CC Apollo 7, Houston. I've been informed that flash freezing is the reason for waiting 15 minutes.

03 19 43 26 CMP Roger. Thank you.

03 19 43 45 CMP Bill, is that any relation to Flash Gordon?

03 19 43 48 CC Oh, boy.

03 19 43 55 CMP That's the first "oh, boy" for the flight.

03 19 43 58 CC Roger. You got me again.

03 19 44 02 CMP That's the first "oh, boy" we've logged for the flight.

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03 19 44 17 CMP I'm having bacon and toast and peaches and - -

03 19 44 37 CC Apollo 7, Houston. Coming up on LOS Carnarvon.  
S-band volume up, please.  
HONEYSUCKLE (REV 58)

03 19 47 10 CC Houston, Apollo 7.

03 19 47 13 CC Apollo 7, Houston. Go.

03 19 47 16 SC Roger. Do you have any preference on the antenna  
for the radiator degradation tests?

03 19 47 21 CC Stand by.

03 19 47 41 CC Apollo 7, Houston. We are working on it.

03 19 51 26 CC Apollo 7, Houston. The antenna for the radiator  
degradation test will be omni Alfa. There may  
possibly be a switch to B Bravo, but now it  
looks like A is the good one.

03 19 51 43 CDR Roger, Bill.

03 19 51 52 CMP We've got some beautiful pictures of the great  
barrier reef in New Zealand this morning.

03 19 51 56 CC Good. How many frames roughly? Oh - disregard.

03 19 52 07 CMP It was about 5 frames - some frames 43 to 47.  
We weren't quite sure where we were until we  
got that chart update. It was frames 38 to -  
43 to 47 on magazine F.

03 19 52 30 CC Roger.

03 19 52 44 CC Apollo 7, Houston. One minute until LOS; Texas  
at 19.

03 19 52 54 CDR Roger.

TEXAS through ANTIGUA (REV 58)

03 20 21 03 CC Apollo 7, Houston through Texas.  
 03 20 21 10 CMP Roger, Jack. Go.  
 03 20 21 12 CC Roger. Standing by. Donn, how are you this morning?  
 03 20 21 15 CMP Just fine, Jack.

TEXAS through BERMUDA (REV 59)

03 20 25 12 CC Apollo 7, Houston.  
 03 20 25 21 LMP Roger. Go ahead.  
 03 20 25 22 CC Roger. We'd like to know whether you have shown any restarts on the computers since we last talked to you at Carnarvon.  
 03 20 25 29 LMP That's affirmative. We're now flying to attitude for the radiator degradation. I had loaded P30 incorrectly the first time. In loading P30 - trying to load it correctly - we ended up giving it an insoluble problem here and got a restart on it.  
 03 20 25 49 CC Okay. Thanks, Walt.  
 03 20 25 54 LMP We may be just a tad late getting the attitude. Why don't we give you a hack at the start time when we start the radiator degradation test? It may be a few minutes after 92 35.  
 03 20 26 05 CC Okay. That's fine.  
 03 20 26 28 CC Walt, we show two restarts here since we last saw you at Carnarvon.

03 20 26 37 LMP We did it twice.

03 20 26 39 CC Ah so.

03 20 26 47 LMP We're still in the P40, and we proceeded to the end - trying to proceed to the end of P40, and it still didn't light the answer, and then we just reselected P00.

03 20 26 58 CC Okay. Fine.

03 20 29 29 CC Apollo 7, Houston. We're not receiving any BIOMED data. Do you have the harness hooked up?

03 20 29 42 LMP Roger. We have the CDR connected, and he's busy with his own radiator test.

03 20 29 51 CC Roger. Understand.

03 20 29 55 LMP We have other things happening right now.

03 20 29 58 CC Say again, Walt?

03 20 30 05 LMP He'll be back on BIOMED in about - shortly.

03 20 30 09 CC Okay. We'll be standing by.

03 20 32 22 CC Apollo 7, Houston. You have a GO for 77 dash 1.

03 20 32 28 LMP Roger. Go 77-1. And we will be in attitude and starting radiator degradation test on time.

03 20 32 35 CC Roger. Copy. We're about to lose you over Bermuda; pick you up Canaries at 92 36.

03 20 32 42 LMP Roger.

CANARY (REV 59)

03 20 36 39 CC Apollo 7, Houston through Canary.

03 20 36 43 LMP That was 92 35, and we have manually selected radiator 2.

03 20 36 49 CC Roger. Copy that.

03 20 36 52 LMP The evaporator seems to be working for now. I wouldn't - I don't know how long we can count on it.

03 20 36 57 CC Roger.  
TANANARIVE (REV 59)

03 20 40 20 CC Apollo 7, Houston. We would like tape recorder forward switch to OFF, and then your DSE will be configured for this test.

03 20 40 31 LMP Tape recorder forward is OFF.

03 20 40 57 LMP Hey, Jack, we have the water boiler operating, but it - in very fact - seems to be driving us against the stops here. Looks like it is going to cost us more than we had thought it would.

03 20 41 13 CC Roger. I'm watching it.

03 20 42 25 CC Apollo 7, 1 minute LOS Tananarive; Carnarvon at 93 11.

03 20 42 31 LMP Roger.  
CARNARVON (REV 59)

03 21 11 46 CC Apollo 7, Houston through Carnarvon. Standing by.

03 21 11 51 LMP Roger, houston. We've been in this - we've been in this mode now for about 36 minutes, Jack, and we were in ATTITUDE HOLD and pitch and yaw, and the machine was spitting out pulses at the rate about nine to ten a minute and - which was pretty

expensive. Donn has now gone to - with the pulse mode no ATTITUDE HOLD on all three axes and seems to be doing better on the thing, but you might take a look. We would like to have a figure on board here - if you can get it to us - how many pulses to the pound of fuel?

03 31 12 32 CC Roger. Stand by.

03 21 16 30 CC Apollo 7, Houston.

03 21 16 34 LMP Go, Jack.

03 21 16 35 CC Okay. Walt, on your question on the fuel usage and minimum impulse: fuel usage is about .01 pounds for each engine that pulses, so if you are using two jets for each axis, it's .02 pounds every time it pulses.

03 21 16 55 LMP A hundred pulses to a pound.

03 21 17 03 CC Yes, so you are going to get - you can get 100 jet firings per pound.

CARNARVON (REV 59)

03 21 17 10 LMP Roger. Understand. Thank you very much. We had 35 minutes worth at about ten pulses - nine to ten pulses a minute.

03 21 17 22 CC Okay. Copy that.

03 21 17 27 LMP Now we are down to two to four pulses a minute.

03 21 17 33 CC Roger. Understand. And we have got about 30 seconds till we lose you here. Do you want to turn up your S-band volume? And we'll pick you up over Honeysuckle.

HONEYSUCKLE (REV 59)

03 21 26 58 CC Apollo 7, Houston. One minute LOS Honeysuckle; Guaymas at 93 plus 49.

03 21 27 06 LMP Roger, Houston.

GUAYMAS through BERMIDA (REV 59)

03 21 50 17 CC Apollo 7, Houston through Guaymas.

03 21 50 21 LMP Roger, Jack.

03 21 50 24 CC Roger. I hear you five-by.

03 21 50 25 LMP Roger.

03 21 50 26 CC I would like to ask you how the H<sub>2</sub> stratification test went.

03 21 50 32 LMP I haven't done that test yet. If things get pretty well settled down, I will go ahead and run it; but it's not critical, and I'm not at 60 percent yet on either gage.

03 21 50 41 CC Roger. Understand. And, also, I would like to verify the position of - that the hand control power switch is at BOTH.

03 21 50 49 LMP That is correct.

03 21 50 51 CC Okay. Fine.

03 21 53 06 CMP Houston, Apollo 7.

03 21 53 09 CC Go ahead, 7.

03 21 53 11 CMP Can you verify with your individual temps that we actually are selected radiator 2?

03 21 53 32 CC Apollo 7, affirmative. We can verify that. We are watching it.

03 21 53 46      CMP      Also, if everything is running nominal on this thing, we obviously don't have any battery degradation. Is there any reason for - -

03 21 54 00      CC      Say again, 7. You got cut out.

03 21 54 04      CMP      Stand by. Is there any reason for running it the full 4 and 1/2 hours if we find that the radiators are working good? It would be nice if we could save the fuel if we could draw conclusions earlier.

03 21 54 21      CC      Roger, 7. If it's at all possible when we look at that thing, we will try to cut it off early.

03 21 54 28      CMP      Roger. Understand. You know what I'm getting at, Jack.

03 21 54 31      CC      Yes, I do.

GUAYMAS through BERMUDA (REV 60)

03 22 00 18      CC      Apollo 7, Houston. We would like you to place your O<sub>2</sub> fans and tank 2 ON for the next 5 minutes.

03 22 00 28      CMP      Wait one.

03 22 02 44      CC      Apollo 7, Houston.

03 22 02 47      LMP      Go ahead.

03 22 02 48      CC      Roger. We would like to send you a new state vector. Would you go to ACCEPT?

03 22 02 57      LMP      Okay. Let me take a little check. We're trying to monitor something on it, but ...

03 22 03 03 CDR Jack, can you uplink to that ... display? We're using that to fly by.

03 22 03 08 CC Roger. I figured that, but what we would like to do is to give you a - -

03 22 03 14 LMP That's okay, Jack. I'll turn loose ...

03 22 03 16 CC Okay. We can send this at Canary if you would rather wait.

03 22 03 24 LMP It's clear now.

03 22 03 25 CC Okay. Coming up.

03 22 04 06 CC Apollo 7, I'm ready to give you the NAV check PAD when you are ready to copy.

03 22 04 13 LMP Wait one.

03 22 04 26 LMP We'll take it later.

03 22 04 28 CC Okay. Just let me know when you are ready.

03 22 05 02 CC Apollo 7, Houston. We are through with the update; the computer is yours.

03 22 05 10 LMP Right.

03 22 06 42 CC Apollo 7, Houston. You can turn your O<sub>2</sub> tank 2 fans off.

CANARY (REV 60)

03 22 11 23 CC Apollo 7, Houston through the Canaries. Standing by.

03 22 11 28 CDR Do you want tank 2 fans on for 5 minutes?

03 22 11 37 CC Roger. You can turn them off now. Did you have them on for 5 minutes, Wally?

0 03 22 11 43 CDR Negative. We haven't turned them off yet.  
You want the tank 1 fans on for 5 minutes,  
right? We have the number 2 on now.

03 22 12 01 CC Okay. Wally, number 1 should be in AUTO and  
number 2 should be on for 5 minutes and then  
off.

03 22 12 17 CDR We had it on for 5 minutes.

03 22 12 20 CC Okay. Then you can cut them off whenever you  
are ready.

03 22 12 24 CDR Do you want that ON or AUTO? Two was in AUTO.  
Do you want it ON?

03 22 12 33 CC Okay. After 5 minutes, Wally, tank 2 fans  
should be O-F-F, OFF.

0 03 22 14 03 CC Apollo 7, Houston. We are not reading the  
CDR's BIOMED data. Would you switch to IMP?

03 22 14 13 CC Oh, 7, we just got CDR data.

03 22 14 17 CDR Roger. I just came on the line.

03 22 14 21 CC And I have this NAV check data PAD to pass up  
to you whenever you are ready.

03 22 15 07 CDR Go ahead.

03 22 15 15 CDR Go ahead, Jack.

03 22 15 16 CC Okay. The NAV check GET is 094 plus 15 plus 00  
00 plus 2310 minus 01215 089.8.

03 22 15 41 CDR Repeat the whole thing, will you please, Jack?

03 22 15 44 CC Roger. GET is 094 plus 15 plus 00 00 plus  
2310 minus 01215 089.8.

0

03 22 16 11 CDR Roger. 09<sup>4</sup> 15 four balls plus 2310 minus 01215  
089.8.

03 22 16 19 CC Roger. That's got it.

03 22 16 26 CDR What's the hot scoop in Houston today?

03 22 16 30 CC Roger. We're about 30 seconds LOS Canary;  
Tananarive at 9<sup>4</sup> plus 30.

03 22 16 38 CDR Roger. Do you have news in Houston?

03 22 16 42 CC Oh, it was real fine this morning.

03 22 16 48 CDR ...  
TANANARIVE (REV 60)

03 22 30 32 CC Apollo 7, Houston through Tananarive.

03 22 30 40 CDR ... just crossing the States here up around  
... Madagascar ...

03 22 30 45 CC Roger. You're loud and clear. We monitored  
your fuel real closely during that first rev  
in the radiator degradation test, and we show  
a usage of approximately 5 pounds. We are  
really watching it. We'll let you know. And  
I'll let Gino read you the morning news.

03 22 31 07 CC Good morning up there.

03 22 31 12 CDR Roger. This is ... of the coast between  
Madagascar and Africa.

03 22 31 27 CC Wally, this is Gino. I've got a little news  
if you want to read - listen.

03 22 31 40 CDR ... off the harbor at Dar Es Salaam.

03 22 32 11 CC 7, this is Houston.

0 03 22 32 18 IMP This is Apollo 7. Go.

03 22 32 20 CC Walt, I got a little morning news here if you would like us to send it up.

03 22 32 36 GMP Yes, go ahead. Go ahead.

03 22 32 38 CC Okay. This morning the headlines have described your burn yesterday - your last burn, as "perfect." However, it goes on to say there was a 9-minute burn.

03 22 32 48 CDR Beautiful.

03 22 32 49 CC Randy Matson won an Olympic Gold Metal in his shot yesterday and so did Houston's sprinter Jim Hines who won the 100-meter dash in 9.9.

03 22 33 00 CDR That's moving!

03 22 33 01 CC And the Astro's lost four ballplayers to Montreal in the expansion draft in the National Baseball League.

03 22 33 11 CDR Who did they lose?

03 22 33 15 CC Stand by. We'll get that for you later; I'm not sure. Wire services also picked Southern Cal as the number 1 college team in the nation, and I think Donn will appreciate this next statement. Somehow, when Ohio State managed to slip by the Boilermakers last Saturday, they slipped into the second ranking.

03 22 33 30 GMP Roger. I'm surprised they are not first.

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03 22 33 34 CC I don't know how they won that Saturday. Hey, it looks like your cards and letters are coming in here real strong over the past 24 hours, and your TV ratings on the Monday morning show are pretty high.

03 22 33 49 CDR Was it announced on the Today Show, or were we on it?

03 22 33 53 CC You are going to have a couple hundred million people standing by. As a matter of fact, with a little work, we have managed to book you for another week.

03 22 34 03 CDR We've got our straw hats; we'll try to make a show.

03 22 34 07 CC Okay. Wally, it was really a good show yesterday. The Astros lost Bateman, Brand, Dukes, and Herrera.

03 22 34 16 CDR ... catcher.

03 22 34 26 CDR The weather looks real - looks good today in the Madagascar area.

03 22 34 32 CC Roger.

03 22 34 55 CDR Gene, frame 49 was a small island on the north side of Madagascar.

03 22 35 07 CC Roger, Wally.

03 22 35 09 CDR A small island similar to an atoll type.

03 22 35 19 CC Sounds like you guys are riding a real Cadillac up there. Things have been going real good from where we sit.

03 22 35 25 CDR We've had some traumatic experiences what with the AC 1 and AC bus 2 slipping out. Water all over the place, but it looks to be in good shape now if nothing goes wrong.

03 22 35 47 CDR Actually, we've found the most uncomfortable suit was ... material.

03 22 35 56 CC You are 1 minute LOS Tananarive; we'll see you at Carnarvon.

CARNARVON (REV 60)

03 22 46 32 CC Apollo 7, Houston through Carnarvon.

03 22 46 35 IMP Roger.

03 22 46 49 IMP Jack, we were a little late on that last 3-minute tape dump business. It shouldn't be that clean. I don't think, though.

03 22 47 04 CC Roger. Copy that, Walt.

03 22 47 45 IMP Jack, can we have a chart update, please?

03 22 47 51 CC Coming up; stand by.

03 22 47 54 IMP Roger.

03 22 48 14 CC Okay. Ready for your map update?

03 22 48 17 IMP Go.

03 22 48 18 CC Okay. For REV 60, the time of the node is 95 plus 11 plus 44, longitude 162.3 west, right ascension of 05 plus 02.

03 22 48 40 IMP Thanks, Jack.

03 22 48 42 CDR Give them a call; that's real great the way they come up with it in a hurry. I appreciate it.

03 22 48 44      CU      Roger.

03 22 48 56      CDR      Jack, we're going to need an update on the sleep cycle here. We can't let Donn go to sleep for the next hour.

03 22 49 09      CC      Okay. We'll figure that out, Wally.

03 22 49 12      CDR      Calm or not, we're going to regroup on him. At 9:00 a.m. Cape time, we've caught him in our bed.

03 22 49 17      CC      Roger.

03 22 49 20      CDR      No rush; we'll just hang in here.

03 22 49 25      CC      Okay.

03 22 49 28      CDR      Jack, do we have a TV pass today?

03 22 49 33      CC      Roger. You have a TV pass, Wally.

03 22 49 39      CDR      Okay. We'll be on top.

03 22 49 41      CC      Okay. The time of TV will be about 95 plus 25, which is about - oh, about 45 minutes from now.

03 22 49 50      CDR      Roger.

03 22 51 10      CC      Apollo 7, Houston. Do you want to turn up your S-band so we can pick you up over Honeysuckle?

03 22 51 17      IMP      Roger.

03 22 51 56      IMP      Houston, Apollo 7.

03 22 51 59      CC      Go ahead, 7.

03 22 52 01      IMP      Roger. I had to use that gray tape that ... and taped that BIOMED lead together that kept coming apart. I also used it to tape the microphone together and the lightweight head set, which started coming apart. The gray tape is pretty good gear.

O

03 22 52 15 CC Roger. Copy that.  
 HONEYSUCKLE (REV 60)

03 22 54 24 CC Apollo 7, Houston.

03 22 54 26 CDR Go ahead, Houston.

03 22 54 28 CC Wally, on the sleep cycle there, we have 96 to  
 116 blocked out for a crew sleep cycle. This  
 can be used in any way that the crew sees fit  
 for sleeping arrangements.

03 22 54 45 CDR Very good.

03 22 55 58 CDR Well, Jack, good ole scene in sight here again.  
 I have Perth at night.

03 22 56 14 CDR Houston, did you read?

03 22 56 19 CDR Houston, Apollo 7.

03 22 56 23 CC Apollo 7, Houston. Copy that.

03 22 56 24 CDR Roger.

03 22 56 29 CDR That's the home of Sloans Lager where I have  
 my good beer these days.

03 22 56 33 CC Roger. Wally, they had an earthquake at Perth  
 2 days ago.

03 22 56 38 CDR Oh, really? That's terrible.

03 22 59 00 CC Apollo 7, Houston. We are about 1 minute from  
 LOS Honeysuckle; we'll pick you up at Huntsville  
 at 95 17.

03 22 59 09 CDR Roger. Out.  
 HUNTSVILLE (REV 60)

03 23 17 06 CT Huntsville AOS.

O

O

0 03 23 17 09 CC Apollo 7, Houston through the Huntsville. Stand-  
ing by.

03 23 17 41 CF Huntsville two-wheel log, valid range.

03 23 18 03 CC Apollo 7, Houston through the Huntsville. Stand-  
ing by.

03 23 19 26 CC Apollo 7, Houston through the Huntsville.

03 23 19 30 CDR Roger. Loud and clear.

03 23 19 32 CC Roger. Reading you five-by, Wally.

03 23 19 43 CDR ... Jack?

03 23 19 46 CC Go ahead.

03 23 19 49 CDR I could not hear your last transmission.

03 23 19 52 CC Okay. You're a little garbled - a little back-  
ground noise, but readable.

0 03 23 20 02 LMP Hey, Jack. Understand TV coming on at 95 plus  
25. Over.

03 23 20 07 CC Roger. Your TV time is 95 plus 25.

03 23 20 48 LMP Jack, if we start transmitting the TV at 25,  
how soon do you people see that in the Center?

03 23 21 08 CC Walt, it has to go through the scan converter,  
and it doesn't take too long. We get it fairly  
soon.

03 23 21 17 LMP When we initially ... started, we're coming down  
to Texas; and in the end, we end up coming through  
the Cape. That right?

03 23 21 29 CC I couldn't get that, Walt. Huntsville isn't real  
good, but we will catch you at California here.

0 03 23 21 37 LMP Roger. Do our first TV transmissions go through Texas, and then in the end, we are transmitting through the Cape?

03 23 21 43 CC That is affirmative.  
GOLDSTONE through ANTIGUA (REV 60)

03 23 25 02 CC Apollo 7, Houston.

03 23 25 06 CMP Roger, Houston. Go.

03 23 25 08 CC Roger. We'd like you to switch your S-band AUX switch.

03 23 25 15 CMP Switch S-band AUX to what?

03 23 25 16 CC S-band AUX to TV.

03 23 25 20 CMP Roger. Going to TV.

03 23 25 24 CMP It's ON.

0 03 23 25 26 CC Roger.

03 23 25 49 CMP How's it going, Jack. Do you read?

03 23 25 51 CC Not yet, Donn.

03 23 25 53 CMP Okay.

03 23 26 04 CC Starting to come through now, Donn.

03 23 26 06 CMP Okay.

03 23 26 13 CMP Can you see anything yet?

03 23 26 16 CC We're just getting - just starting to pick you up now.

03 23 26 28 CC Okay. We're starting to pick you up. You're looking good. It's a good picture. Looks like we can see the straps in the center seat zero g.

0 03 23 26 41 CMP Roger. Can you see me? I'm in the left seat.

03 23 26 44 CC Affirmative.

03 23 26 45 CMP Okay.

03 23 26 51 CC Looks like "From the lovely Apollo Room, high atop everything."

03 23 26 56 CMP That's right. Coming to you live from outer space, the one and only original Apollo orbiting road show, starring those great acrobats of outer space, Wally Schirra and Walt Cunningham.

03 23 27 20 CC Just a minute, Wally. Let's see. Oh, it's a little message to Deke Slayton. A little bit closer, Wally. Kind of looks like something about "Are you a, are you a --

03 23 27 41 CDR That's right.

03 23 27 42 CC Looks like it says "Are you a turtle, Deke Slayton?"

03 23 27 46 CDR That's right.

03 23 27 54 CMP You get A for reading today, Jack.

03 23 27 57 CC Here comes another one. Walt, oh, that-a-way, that's the way to turn it. It says, "Paul Haney, are you a turtle?"

03 23 28 13 IMP You'll get a gold star; perfect score!

03 23 28 16 CC And there is no reply from Paul Haney there.

03 23 28 21 CMP You mean he's speechless?

03 23 28 37 CC Apollo 7, Houston. Would you close the back pressure valves and go to INCREASE?

03 23 28 43 CMP Roger. Stand by.

O

03 23 28 49

CC

It's a real good picture.

03 23 28 52

OMP

Roger.

03 23 28 53

CC

You might take us on a little tour of your castle there if you have a chance.

03 23 29 01

CDR

Okay. Stand by.

03 23 29 05

IMP

I think we can work that out. Let's take it off the bracket and pan the cockpit a little bit.

03 23 29 17

CDR

At this point, we are looking across the cockpit over Walt Cunningham's chest toward Donn Eisele, who's controlling the spacecraft ... for the radiator degradation test. There you see a pen cruising by, and I need to make some notes, obviously. From there, we concentrate on the left seat's attitude control. You can see possibly two of the instruments for attitude control over there. In the center panel, we have many of the switches that position the machine, that are complicated to fly, and we monitor our systems on this side. At this point, Walt Cunningham is working on the glycol evaporator steam pressure and the waterboiler. We've had quite a few problems on this, but we've a few of them solved with a little extra special attention.

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03 23 30 13

CDR

Looking across the cockpit to the right, we have most of our electrical power controls, fuel cell controls. Then, as we continue across the cockpit,

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we'll come to the right side and that window where you can see the Gulf Coast outside, and with the weather and winds, we've got surf galore.

03 23 30 35      CC      The outside doesn't show too well due to the ORB rate, Wally.

03 23 30 46      CDR      I am now going to work my way down into the lower equipment bay where we have our navigation station. Here you can see the heart of the navigation system of the Apollo spacecraft - the command module, that is - the sextant and telescope. The near large object is a monocular type device - is the telescope, and adjacent to it - the small instrument - is the sextant. We acquire a known star in the telescope, put it in the center of the telescope, and then acquire in the sextant where it can be marked on a rather carefully graduated set of gimbals to give us the exact position of the star.

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GOLDSTONE through ANTIGUA (REV 61)

03 23 31 36      IMP      I'm now panning over to Wally who is going to get the telephoto lens out of its stowage compartment, and we'll attempt to do a little out-the-window photography.

03 23 31 50      CC      Walt, the out-the-window doesn't show up very well, Walt, due to the ORB rate --

03 23 31 59      IMP      Do you want to skip the out-the-window?

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0 03 23 32 01 CC No, we'd like you to keep it inside. The ORB rate just makes it impossible to see much outside.

03 23 32 07 LMP Roger. Understand. Okay.

03 23 32 12 CC Wally, this is Gene. Deke just called in, and we've got your answer, and we've got it recorded for your return.

03 23 32 18 CDR Roger. Real fine.

03 23 32 19 CDR We'll now show you the lower equipment bay where we have the water control and oxygen control panels and one panel where we can also change the lithium hydroxide in flight - to change out carbon dioxide removal.

03 23 32 48 CDR I've just opened one of our food bays, and when I pulled the curtain down, you'll notice that we have a real good package that is portable. This bay is near empty. We'll switch to another bay starting tomorrow.

03 23 33 07 CDR This is an empty food bay with food rolled up rather tightly for the first 4 days of consumption. Our dietitian, Rita Rapp, will appreciate how tightly we repackaged the empty, torn-up packets of food.

03 23 33 35 CDR And now, we will rotate the camera around through the lower equipment bay back out towards the cockpit. I'm sure - the spaghetti that you see, which is the COAS cable, that I'm holding.

Walt Cunningham is working with our exercise device, using a bicycle motion to stimulate his cardiovascular system. You can take the same device in all the ... and use the arms in a curling motion to create an exercise in the upper torso. I'm going to swing now to the other side of the cockpit where you can see Don is still maintaining the attitude of rather a tight deadband to prepare for our radiator degradation test.

03 23 34 40 CDR You might say we have our lighter moments.

03 23 34 48 CDR Have you got Haney's answer yet?

03 23 34 51 CC No, Haney isn't talking, Wally.

03 23 34 55 CDR Roger. And how much more time do you want on this machine?

03 23 35 00 CC Somebody tells me he isn't talking, but just buying.

03 23 35 06 CDR He is buying. Thank you very much. Very good.

03 23 35 12 CDR We will now take you down below the couches to our storage area. This bottom opens up to be a sleep station. The object below is a headrest - swings off and stows. The large bulky bag that you see off to the camera left is where our surface suits are stowed at this time.

03 23 35 40 CDR Jack, do you still have the picture working pretty well?

03 23 35 43 CC The picture quality isn't as good now after the handover to the Cape, but we can still make it out.

03 23 35 51 CDR I'm going to take you through the area where the water is collecting.

03 23 36 19 CDR This is the area where water was condensing on the pipes, just below the commander's left shoulder. You will notice that the panel here was refrigerated, and with the ... there is water condensation on the pipe. We vacuumed it off periodically, and it forms a large ball of about the size of a ping pong or golf ball.

03 23 36 50 CC Okay. Wally, we've lost the picture now. We copied the water condensation, and we saw the beginning of your transmission on the water condensation there.

03 23 36 58 CDR Very good.

03 23 37 01 CC That was a real good pass.

03 23 37 06 LMP Say, Jack, we've got the steam pressure off the peg, but we don't seem to be able to put it back up in the boiling range, and we are not boiling now.

03 23 37 18 CC Walt, we would like you to reservice the primary evaporator at 45 over the Canaries.

03 23 37 27 LMP Reservice - you want 2 minutes of water flow?

03 23 37 33 CC That is affirmative, Walt; 2 minutes of water flow.

03 23 37 37 LMP Roger. I treasure mine, Deke; it took me 6 years to get that back to even.

03 23 37 44 CC I couldn't copy that, Walt.

03 23 37 46 LMP Remind Deke it took 6 years to get that question back to him.

03 23 37 52 CC Roger.

03 23 37 56 LMP It's almost sixth anniversary.

03 23 38 46 CC Apollo 7, Houston. One minute LOS Bermuda; we'll pick you up at Canary at 95 plus 46. That was a real good tour of your castle there.

03 23 38 57 CDR Very good.

03 23 38 58 CMP Roger. Welcome aboard.

03 23 39 01 LMP Hey, Jack, does that go out live?

03 23 39 02 CC That went out live.

03 23 39 09 CMP Is Deke Slayton out of the press conference now?

03 23 39 29 CC Deke isn't here right now, Donn, but Harriet's in the Control Room and watches all.

03 23 39 36 CDR Roger. Very good. (Laughter)

03 23 39 41 CMP Roger. Understand. Tell her hello for me.

03 23 39 47 CC You just did; she's nodding her head.

03 23 39 50 CMP Okay.

CANARY (REV 61)

03 23 46 20 CC Apollo 7, Houston through Canary.

03 23 47 36 CC Apollo 7, Houston.

03 23 47 43 LMP Go ahead, Houston.

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○

03 23 47 46

CC

Roger. You're 1 minute LOS Canaries; Tananarive  
96 plus 01. And, Walt, when you get the evaporator  
reserviced, you can put it back on the line and  
put the switch in AUTO.

03 23 48 00

LMP

Okay. I'll give it 2 minutes of water now.

○

○

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TANANARIVE (REV 61)

04 00 03 44 CC Apollo 7, Houston through Tananarive.

04 00 04 21 CC Apollo 7, Houston through Tananarive. Standing  
by.

04 00 04 24 SC Houston, Apollo 7.

04 00 04 29 CDR Houston, Apollo 7. Do you read?

04 00 04 30 CC Read you five-by. We're standing by here.

04 00 04 33 CDR Roger. Think we better knock this run off  
here and calculate the amount of fuel usage.

04 00 04 38 CDR We've got over 3 hours in the bank of this  
test which is a lot better ... I expected.

04 00 04 46 CC Wally, we are not reading COMM very well  
through Tananarive here.

04 00 04 54 CDR We are terminating this test.

04 00 05 18 CDR Houston, how do you read? Apollo 7.

04 00 05 22 CC Okay, Apollo 7. Houston.

04 00 05 25 CDR Roger. We've terminated the evaporator test.

04 00 05 29 CC Wally, we have been monitoring the fuel usage  
very closely. They find the fuel usage is nom-  
inal for this test. We would like to continue  
the test and use the secondary evaporator if re-  
quired to lower the EVAP OUT temperature.

04 00 05 55 CC COMM is very bad here over Tananarive; we will  
have a real good pass with you through Carnarvon.

04 00 06 05 LMP Roger. The primary evaporator is working fine  
again.

04 00 06 11 CC Okay. Copy that, Walt.

435

04 00 10 22 CC Apollo 7, Houston. We're 1 minute LOS Tanana-  
rive. We'll pick up ARIA 1 in about 2 minutes.  
Monitor you there through Carnarvon.

04 00 10 33 CMP Roger. We'll continue with the transmit.

04 00 10 37 CC Roger. Copy.

04 00 10 51 CMP Hey, Jack, this is Walt. Give me 30 clicks on  
the water gun in the last 3 hours.

04 00 10 57 CC How many clicks, Walt?

04 00 10 59 CMP Thirty.

04 00 11 00 CC Roger. Thirty clicks.

04 00 11 02 CMP And CDR: 25.

04 00 11 05 CC Twenty-five to CDR.

04 00 11 07 CMP Thirty for CMP.

04 00 11 10 CC Thirty for CMP.

ARIA 1 (REV 61)

04 00 14 11 CC ARIA 1. Go REMOTE.

04 00 14 59 IMP Houston, Apollo 7. Stand by.

04 00 15 22 CC Apollo 7, Houston through ARIA.

04 00 16 04 CC Apollo 7, Houston through ARIA. Standing by.

04 00 18 38 CT ARIA 1, AOS. You may lock.

04 00 18 44 CC Apollo 7, Houston through ARIA.

04 00 19 05 CC Apollo 7, Houston through ARIA.

CARNARVON (REV 61)

04 00 19 50 CC Apollo 7, Houston through Carnarvon.

04 00 19 57 CMP Houston, Apollo 7. How do you read?

430

04 00 19 59 CC You're reading - I'm reading you five-by, and I have your block data number 11 whenever you're ready to copy.

04 00 20 09 CMP Roger. Stand by for the copy. Jack, on the Hasselblad magazines: now they have the modified slide in it, and it's possible to take pictures with the slide still in place on the back. I think we'd probably be better off with a safety on those. We just got through taking four pictures with the back in place and wasted —

04 00 20 35 CDR Slide.

04 00 20 36 CMP — slide in place, excuse me, and we wasted four shots there, and probably three or four other ones through the flight at random.

04 00 20 45 CC Okay. I copy that, Walt.

04 00 21 27 CMP Jack, go ahead with your updates.

04 00 21 32 CC Roger. Block data 11: 063 dash 4 A plus 305 minus 1599 099 plus 36 plus 59 3402, 064 dash 4 A plus 309 minus 1600 101 plus 13 plus 24 3578, 065 dash 4 A plus 269 minus 1600 102 plus 46 plus 04 2888, 066 dash 3 A plus 309 plus 1363 104 plus 04 plus 38 3403 plus, 067 dash 3 A plus 306 plus 1362 105 plus 41 plus 04 3607, 068 dash 3 Baker plus 261 plus 1344 107 plus 13 plus 10 2888.

04 00 24 34 CMP Roger. That's complete, your block update, Jack?

04 00 24 37 CC Affirmative.

04 00 24 39 CMP A readback as follows. Did you start with 62 or 63?

04 00 24 49 CC 063 dash 4 A.

04 00 24 52 CMP You're 063 dash 4 A plus 305 minus 1599 099 3659 3402, 064 dash 4 A plus 309 minus 1600 101 13 24 3578, 065 dash 4 A plus 269 minus 1600 102 46 04 2888, 066 dash 3 Alfa plus 309 plus 1363 104 04 38 3403, 067 dash 3 Alfa plus 306 plus 1362 105 41 04 3607, 068 dash 3 Bravo plus 261 plus 1344 107 13 10 2888.

04 00 25 59 CC Roger. That's correct.

04 00 26 23 CC Apollo 7, Houston. Did you purge O<sub>2</sub>?

04 00 26 29 CMP I purged O<sub>2</sub> at the regular scheduled time, which was several hours ago, I think. Wasn't it?

04 00 26 35 CC Roger. We copy.

04 00 26 37 CMP Check the time on that, will you, Jack?

04 00 26 40 CC Roger. That should have been at 94 hours.

04 00 26 44 CMP That's right; we purged at 94 hours.

04 00 26 47 CC Okay. Thank you.

04 00 26 49 CDR We're going through a meal now and probably have a gripe. The cracker-type food, chicken sandwiches: they are all crumbly, and we have a lot of problem with crumbs all over the cockpit. We have been rejecting a lot of this.

04 00 27 10 CC Okay. Wally, we copy that. You are about 1 minute LOS Carnarvon, and we won't get you again till Hawaii at 96 plus 45.

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04 00 27 26 CDR Roger.  
HAWAII through BERMUDA (REV 61)

04 00 45 30 CC Apollo 7, Houston through Hawaii.

04 00 45 38 CMP We've completed all our data recording through you. Are you going to be dumping that tape now?

04 00 45 49 CC Apollo 7, Houston. We are going to rewind the tape here. We will dump it over the States.

04 00 45 56 CMP Roger. And can we secure this test?

04 00 46 03 CDR We will continue for 30 more minutes.

04 00 46 06 CC Okay. We are going to secure at 97 hours, Wally.

04 00 46 09 CDR Roger.

04 00 47 45 CDR Jack, this is Wally.

04 00 47 47 CC Go ahead.

04 00 47 49 CDR This is really a thrilling flight control task. One slow roll in an hour and a half.

04 00 47 56 CC (Laughter) Roger. Copy that.

04 00 51 10 CC Apollo 7, Houston.

04 00 51 14 CMP Say again.

04 00 51 16 CC Walt, I have this daylight scanning telescope star count PAD to give you whenever you are ready to copy.

04 00 52 01 CMP Okay. It's the daylight scanning telescope star count or the sextant star count, Jack?

04 00 52 16 CDR Jack, how much fuel did we blow on that one that is impossible to use?

04 00 52 27 CDR Houston, Apollo 7.

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04 00 52 31 CC Wally, we will give you a hack on your fuel use on this - the fuel usage we have copied so far has been between 17 and 18 pounds, which is right on the nominal for this test.

04 00 53 49 CMP Jack, I'm ready to copy the update chart.

04 00 54 02 CMP Houston, Apollo 7.

04 00 54 04 CC Okay. Walt, stand by one.

04 00 54 08 CDR Jack, on some of these ... let's assume we've learned something up here in 5 days that somebody else hasn't learned yet.

04 00 54 18 CC Say again, Wally. I missed that.

04 00 54 21 CDR Let's assume we have learned something up here in the last 5 days that we didn't know before we came up.

04 00 54 35 CC Okay. I have this daylight star count PAD to pass up.

04 00 54 43 CDR Okay. We will take it.

04 00 54 45 CC Okay. GET of sunrise 98 plus 15, roll 000, pitch 097, yaw 000. GET of sunset minus 12 98 plus 56, roll 000, pitch 327, yaw 000. Your T align will be 98 plus 15, and the only remark —

04 00 55 38 CDR Do we have to do this T align for these angles? We have a REFEMMAT now.

04 00 55 43 CC Roger. The T align is for those angles, and the other change on this is that the shaft will be 90 degrees and a trunnion of zero degrees.



04 00 56 02 IMP Okay. Zero shaft 90. Donn has got something to report.

04 00 56 10 CMP Jack, we did this test a couple of days ago with a 120-degrees angle up, and I just didn't see much point in it. Your ability to see stars is not so much the function of light transmission of the telescope as it is a matter of stray light you got coming in from loose particles flying around outside that look like stars and also in stray light that comes up from the earth and whatnot, distorting the telescope picture. Jack, the point is I don't think you are going to learn a lot from this. We know already that the stars aren't all the same, aren't all the same ... adapter.



04 00 56 55 CC Okay. Donn, we've got real poor COMM. I can't quite copy. Let's wait until we get over the coast, and we will have a little better COMM.

04 00 57 03 CMP Roger. Copy.

04 01 00 01 CC Apollo 7, Houston.

04 01 00 05 CDR Go ahead.

04 01 00 06 CC Roger. Appears to us that the evaporator might be drying out again.

04 01 00 11 CDR Darn right.

04 01 00 19 CDR Jack, I've been trying to tell you that with realignment we lose fuel, get into a new attitude, fly at two different attitudes to prove



what we have already discovered in this flight: that you can't see stars in the telescope except just after sunrise ... or just after ... sunset which we have been trying to tell the Project Office for about 5 years.

04 01 00 42 CC Roger. Copy that. Wally, this test here has the telescope sunlight of sight at 70 degrees, which is the worst case, and we would kind of like to get this one in.

04 01 00 56 CDR That's what I've been trying to tell you. With the best case, we didn't do any good. If you want us to do the test, all right; we will do it, but we are kind of tired of arguing with people who tell us to do this. I'm not talking about you, but the various things you don't know about telescopes.

04 01 01 27 CDR It's a quarter after 12 00, Cape time.

04 01 01 37 IMP Houston, is the radiator degradation test over yet?

04 01 01 43 CC Apollo 7, Houston. You can discontinue the radiator degradation test.

04 01 01 49 IMP Roger.

04 01 04 23 IMP You appear wide open from here today.

04 01 04 27 CC Go ahead, Apollo 7.

04 01 04 28 IMP Roger. You look like you are pretty wide open on weather today.

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04 01 04 32 CC That's affirmative.

04 01 04 34 LMP We remember last time. Over.

HAWAII through BERMUDA (REV 62)

04 01 05 18 CC Apollo 7, Houston.

04 01 05 26 CMP Go ahead, Jack.

04 01 05 28 CC Donn, while you are taking photographs during either this stateside pass - or the next one if you can fit it in - we would like to get a picture of Tucson and a picture of a tropical storm which is presently just south of Cuba.

04 01 05 51 CMP Understand. Tucson and a storm south of Cuba.

04 01 05 55 CC Roger. Tropical storm Gladys just south of Cuba.

04 01 05 59 CDR Which end, Jack? South of Haiti or south of the ...?

04 01 06 12 CDR If you could give us latitude and longitude, that would help us.

04 01 06 16 CC Stand by, Wally.

04 01 06 30 CC Okay. Wally, the present position of this storm is south of the eastern tip of Cuba and east-western tip of Cuba and east of the Yucatan Peninsula.

04 01 06 43 CDR ... up through the Cuban Islands? Okay. We got a pretty good fix on it. It will be on the next two passes, and we should get a cut of it.

04 01 07 02 CC Next pass, it looks like you would be in a little better position; it looks like you might even pass right over it.

04 01 07 20 CMP Jack, this is Donn. Would you log me ten clicks on the water gun?

04 01 07 25 CC Roger. Copy that.

04 01 07 27 CMP Give Walt 15 clicks.

04 01 07 30 CC Fifteen for Walt.

04 01 07 31 CMP And Schirra will take 20.

04 01 07 33 CC Okay.

04 01 08 11 CC Apollo 7, we show you are approaching Guaymas LOS.

04 01 08 17 CDR That's what you call skirting the issue, just going by the edge.

04 01 08 20 CC Roger.

04 01 08 33 CMP Jack, on that Tucson-Phoenix, did you want the Pan-X or the 121?

04 01 08 40 CC Stand by.

04 01 08 43 CC We'll get you that by the next pass.

04 01 08 46 CMP Roger. Plenty of time.

04 01 08 55 CDR Jack, on that tropical storm coming up there: do you expect that to come up into the Gulf of Mexico?

04 01 09 01 CC Right now, the forecast that is past, it is up into the west coast of Florida.

04 01 09 08 CDR I see.

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04 01 09 15      CMP      Jack, on that pass, would you log the following pictures, magazine S? Starting down around about 55, I got two good pictures of Houston, two of New Orleans, Mobile Bay, Pensacola. Wally got the Mississippi Delta, the Fort Walter area, and that was about it. The Cape was cloudy, patchy, broken.

04 01 09 41      CC      Okay. Copy that.

04 01 09 48      CDR      Jack, I would recommend to the next crew that they try to eliminate as much bite-size food; that's bothering all of us already.

04 01 09 58      CC      Okay. We copy.

04 01 10 00      CDR      The hot one ...

04 01 10 17      CDR      However, the breakfast drink is going over very well, but we need a better type of food.

04 01 10 27      CC      Okay. Copy. I think he - wait till I get my sheet out now.

04 01 11 08      CC      Apollo 7, Houston.

04 01 11 34      CC      Apollo 7, Apollo 7, Houston.

04 01 11 40      SC      Go ahead.

04 01 11 42      CC      Apollo 7, Houston. Regarding this daylight scanning telescope start count: we're not going to be able to do it with the present REFSMMAT because of a gimbal lock problem. We understood yesterday that we saw more stars than we anticipated at the 120-degree line of sight, and we

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would like very much to get this test in at the 70-degree line of sight. Over.

04 01 12 51 CC Apollo 7, Apollo 7, Houston. Did you copy?

04 01 12 54 CDR Yes, we read you.

ASCENSION (REV 62)

04 01 23 12 CC Apollo 7, Houston through Ascension.

04 01 23 15 CDR Roger.

04 01 23 17 CC Roger. You are five-by. Could you copy our conversation on the scanning telescope star count that we were giving you over Bermuda?

04 01 23 26 CDR I got you. Roger, Jack.

04 01 23 27 CC Okay.

04 01 23 28 CDR I've got some information for you. In minimum impulse and roll, if the stick is released, it will fire a jet in the opposite direction exactly as in the simulator.

04 01 23 42 CC Could you go over that again, please?

04 01 23 45 CDR Okay. In pulse mode, minimum impulse --

04 01 23 48 CC Roger.

04 01 23 50 CDR -- if one pulse is entered - say roll right - the stick is released and brought to neutral; it will cross neutral and roll left one pulse.

04 01 23 59 CC Roger. Copy that.

04 01 24 01 CDR It's the same as the sticks in the simulator; it's not unique.

04 01 24 06 CC Okay. The other thing we wanted to ask you to do: you could do the H<sub>2</sub> stratification test whenever you can fit it in there.

04 01 24 18 CDR Roger. Thank you. That's inside the next half hour.

04 01 24 22 CC Okay. We'd like you to put your tape recorder forward switch to FORWARD.

04 01 24 29 IMP Roger. Are you through dumping?

04 01 24 31 CC Affirmative.

04 01 24 34 IMP It is in FORWARD.

04 01 24 36 CC Okay. The other thing we'd like to get is the general crew status with a status on each man. Could you give us kind of a complete rundown on each man, how they're feeling today?

04 01 24 59 CDR This is CDR. I still have a rather thick mucous nose cold, but none of us are coughing. We're very well rested although last night was rather a short night; and we'll take advantage of the longer hours tonight to catch up again. We've all had plenty to eat and to drink, if not too much. The sight of the food is just too rich for us. I'm still on aspirin, and I'm off Actifed at this time, and all of us are getting out of Actifed. We don't have enough left to keep taking it for the length of the mission. We'll use it prior to reentry.

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04 01 25 45      CMP      This is the CMP. My only complaint is a head cold, just like Wally. I find that my ears plug up now and then. I would take the Actifed except for running out, and I want to save it for reentry in case we need it then. Other than that, I'm in good shape. I've had plenty to eat and drink, had plenty of sleep. No problems.

04 01 26 06      CMP      Are you still reading, Jack?

04 01 26 08      CC      Roger.

04 01 26 10      LMP      Okay. I'm in good shape. I've been sleeping a little better every night, and my ears are just barely clear some mornings and sometimes not. I don't feel bad; I don't feel like I have a cold. I just feel like I'm pretty well stuffed up and on the verge of getting one.

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04 01 26 27      CC      Okay. Copied that.

04 01 26 43      CC      Apollo 7, have any of you had indications of a temperature rise?

04 01 26 50      CDR      Negative.

04 01 26 51      CC      Okay. Fine. Sometime - no hurry on it - you might give us a count on your medication remaining. We kind of lost track here.

04 01 27 03      CDR      Okay. We've been logging it and calling it down, Jim, if you haven't gotten a report on every bit of it. One interesting observation, with a head cold, the fluids do not flow down the throat

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and cause any lung problems. It stays up in the sinuses. This is due to zero gravity, I'm sure.

04 01 27 31 CC

Okay. Copy that.

04 01 27 36 CMP

Jack, this is Donn. I just did a daylight P52. How it happened, we rolled over so that we're staring up to the stars. I did P52 and picked a pair that worked, so I lucked out. It turns out that you can, in general, see stars in the sextant provided it's not too close to the sun and provided all the optics will pull them in for you, but of course, it's impossible to see anything through the telescope under these conditions.

04 01 28 03 CC

Understand --

04 01 28 04 CMP

-- by the stars I marked on explicitly. I assume they are right because the star difference angles was proper.

04 01 28 12 CC

Okay. Real fine.

04 01 28 15 CMP

I wouldn't want to hang my hat on that if I were going to the moon, however.

04 01 28 20 CC

Roger. Understand.

04 01 28 22 CDR

I'd like to make the point; he confirmed the two stars by the star angle difference, like four balls 1.

04 01 28 29 CC

Okay.

04 01 28 31 CDR

And by the pick a pair.

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04 01 28 35 CC Okay. Apollo 7, Houston. We show that one panel is still isolated, and we're about to lose you over Ascension. We'll pick you up at Tananarive here at 497 plus 38.

04 01 28 50 CDR Roger. That's a good call down there. Thank you.  
TANANARIVE (REV 62)

04 01 38 50 CC Apollo 7, Houston through Tananarive.

04 01 38 55 IMP I read you, Jack.

04 01 39 00 CC Roger. We're standing by.

04 01 44 08 CC Apollo 7, Houston. One minute LOS Tananarive. We'll try ARIA 1 at 97 51; Carnarvon at 97 53.

04 01 44 20 IMP Roger.  
ARIA 1 (REV 62)

04 01 47 01 CT ARIA 1, go REMOTE.

04 01 50 42 CT ARIA 1, go REMOTE.

04 01 51 39 CC Apollo 7, Houston through ARIA 1.

04 01 52 01 CC Apollo 7 - Apollo 7, Houston through ARIA 1.  
Over.

04 01 52 30 CT AOS, ARIA 1 AOS.

04 01 52 41 CC Apollo 7, Houston through ARIA 1.  
CARNARVON (REV 62)

04 01 53 16 CC Apollo 7, Houston through Carnarvon.

04 01 53 21 IMP Roger. Jack, I tried to put the primary evaporator back on the line, and it didn't make it.

04 01 53 27 CC Okay. I was trying to reach you through ARIA 1 to do that S-band DTO for ARIA.

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04 01 53 38 LMP We didn't hear you.

04 01 53 40 CC Roger. I didn't hear you, either. On your question about the film over the stateside pass for the pictures of Tucson: the film to use is 80121.

04 01 53 52 LMP Roger. Thank you.

04 01 53 57 CDR Jack, out of curiosity, how many different kinds of S-band passes are there? I'll give you time to figure that one out.

04 01 54 27 CC 7, it appears to be about 20 or 30 different types of modes and conditions for S-band communications tries here.

04 01 54 41 CDR Roger.

04 01 56 21 CC Apollo 7, Houston. On the primary evaporator: did you reservice it before your attempts to put it back on the line?

04 01 56 30 LMP Sure did. We serviced it over Canaries.

04 01 56 37 CC Okay. Copy.

04 01 56 40 LMP Temperatures are even running pretty hot. Can you confirm that both of my radiator panels are flowing now with the individual temperatures, please?

04 01 56 51 CC 7, both of your RAD panels look good.

04 01 56 57 LMP Roger. Thank you.

04 01 57 37 CDR Houston, Apollo 7.

04 01 57 38 CC Go ahead, 7.

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04 01 57 40 CDR I'll give you a medication count. There are three categories: Actifed, aspirin, and one more pill ...

04 01 57 57 CC Apollo 7, I didn't - I copy that you are going to give us the quantity remaining of the three medications.

04 01 58 05 CDR Negative; the quantity used per crewman.

04 01 58 08 CC Okay. Go ahead with the quantity used.

04 01 58 11 CDR Roger. CDR: Actifed six, aspirin 17, Lcomatil two; CMP: Actifed two, aspirin two.

04 01 58 26 CC Copy.

04 01 58 27 CDR IMP: one Actifed.

04 01 58 31 CC Roger. Copy that. Thank you very much.

04 01 58 34 CDR Roger.

04 02 01 24 CC Apollo 7, Houston. Thirty seconds LOS Carnarvon; a short pass at Guam at 98 07; Hawaii at 98 18.

04 02 01 32 CDR Okay. ...

GUAM (REV 62)

04 02 09 02 CC Apollo 7, Houston through Guam.

04 02 09 07 CDR Roger.

04 02 09 13 CC 7, we haven't had a window status check in a while. How are they doing?

04 02 09 19 CDR Roger. They're - why don't we give you a check the next daylight, Jack?

04 02 09 24 CC Okay. Real fine. And the other thing I was kind of curious about, Wally, can you hear the thruster - the RCS thrusters - fire?

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04 02 09 33 CDR Affirmative.

04 02 09 35 CC Okay. Real fine.

04 02 09 37 CDR Only when they light off; we can't hear them when they're burning.

04 02 09 41 CC Okay.

04 02 09 44 CDR Right now, the main thing is you can hear a pulse. It sounds like your hearing - as Donn describes it - a water barrel, a thump, a clunk.

04 02 09 53 CC Roger. Copy.

04 02 10 09 CDR However, the thing seems to have almost a surge of power. It fluctuates back and forth on a sort of a cyclic beat, rather than a steady, smooth application of power.

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04 02 10 26 CC Okay. Copy. We're about 40 seconds from LOS Guam; Hawaii at 98 18.

04 02 10 34 CDR Roger. You might pass that description down to John Healy.

04 02 10 39 CC Roger.

HAWAII (REV 62)

04 02 19 47 CC Apollo 7, Houston.

04 02 19 50 CDR Roger. That set of angles was very good this time. We found the moon right in the middle of the telescope.

04 02 19 58 CC Roger. Copy. We would like to send you up a NAV load, and I'm ready with a NAV check when you're ready to copy. Would you go to ACCEPT?

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04 02 20 20 CDR Okay on the MAV check.

04 02 20 22 CC Okay. Coming up. The MAV check as follows:  
102 plus 30 plus 0000 minus 1154 plus 06596  
1522.

04 02 20 50 LMP Roger. Readback as follows: 102 30 four balls  
minus 1154 plus 06596 1522. Over.

04 02 21 00 CC That's correct.

04 02 21 05 CDR Jack, did you get the impact of the moon being  
in the telescope?

04 02 21 09 CC Roger. We're discussing that now.

04 02 21 11 CDR Yes, you don't count stars when you look at the  
moon.

04 02 21 17 CC Roger. We're scratching our heads.

04 02 21 19 CDR And it's inertial like we are.

04 02 21 31 CC Apollo 7, Houston. The load is in; we're  
finished; the computer is yours.

04 02 21 40 CDR Roger.

04 02 22 30 CDR Looks good enough to us.

HUNTSVILLE through ANTIGUA (REV 62)

04 02 27 10 CT Huntsville two-wheel lock; no ranging.

04 02 29 51 LMP Houston, Apollo 7. We should be able to hack  
the star count on the next pass. The moon  
will not be in the next attitude.

04 02 29 59 CC Roger. We copy.

04 02 31 10 CC Apollo 7, Houston. We're all ready for the  
keying test.

04 02 31 19 LMP Wait one on that keying test.  
 04 02 31 21 CC Roger.  
 04 02 31 29 LMP Okay. I'll go ahead and give you a keying test.  
 We're coming up on a photo shortly.  
 04 02 31 36 CC Roger, 7. Could you stand by one? We lost ...  
 04 02 31 40 LMP Okay. I'll stand by.  
 04 02 32 31 LMP Ready to go on the keying?  
 04 02 32 34 CC Not yet. We're still standing by.  
 04 02 32 57 CC Apollo 7, Houston. We're ready for the keying test.

04 02 33 01 LMP Roger. It follows:

T H I S | I S |  
 A | T E S T | W I T (H) |  
 E M E R G E N C Y |  
 C O N F I G U R A T I O N |  
 K E Y I N G |  
 T E S T |

← error

04 02 34 03 LMP Keying test over.  
 04 02 34 06 CC Roger.  
 04 02 34 18 CC Apollo 7, Houston. We are through with the keying test. You can reconfigure your spacecraft per the flight plan, and you only made two mistakes.  
 04 02 34 27 LMP Yes, I put a couple of dits instead of dahs, didn't I?  
 04 02 34 30 CC Roger.  
 04 02 34 33 LMP Back to configuration.  
 04 02 34 35 CC Okay. Copy.

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HUNTSVILLE through ANTIGUA (REV 63)

04 02 37 42 CDR Last shot crossing States was 67, and Corpus Christi magazine 0.

04 02 37 49 CC Okay. Copy that.

04 02 37 52 CDR We are crossing the Gulf now, looking for the storm.

04 02 38 04 CDR You might give us a MARK when you think we are adjacent to it.

04 02 38 08 CC Okay. Will do, Wally. You got a little ways to go yet.

04 02 39 25 CDR Jack, that looks like one big white overcast about 12 o'clock.

04 02 39 29 CC That should be it. The tropical storm will be south of your flight path here; your flight path should take you right over Cuba, and the tropical storm will be south of the western tip of Cuba.

04 02 39 43 CDR Okay.

04 02 39 45 CDR We'll take a strip going into it; I think that's the best bet.

04 02 39 48 CC Okay.

04 02 40 23 IMP We've got one big stormy area out here, Jack. I don't pick up a characteristic tropical storm.

04 02 40 31 CC Okay. Right now, the wind speeds are about 45 knots. Tomorrow sometime, the winds are forecast to pick up to 70.

04 02 40 43 CDR If it comes up in the Gulf, you can all go down and bail my boat out.

04 02 40 52 CC Roger. There are a few other people with the same problem.

04 02 40 55 CDR Understand. They've got a better chance of getting to their boat than I have right now.

04 02 41 03 CC I think you're right.

04 02 41 06 CDR ...

04 02 41 12 CC I think that is part of the duties of the support crew; we'll take care of it, Wally.

04 02 41 15 CDR I think ... Jack.

04 02 41 39 CDR Jack, frame 68 was the cloud cover that - not really a storm I could discern.

04 02 41 46 CC Roger. Copy.

04 02 42 04 CDR Could you get our rates down there, Jack?

04 02 42 10 CC Roger. Stand by.

04 02 42 11 CDR Roger. That pitch rate now is not something I put in. It just comes from coupling with that little atmosphere of convectional air.

04 02 42 34 CC Wally, right now, it looks like we've got a pitch rate of plus .3.

04 02 42 39 CDR Roger. I don't really think we have anything to worry about on one or two pulses, and the spacecraft actually is torquing itself in pitch, that's all. It's costing us earlier on the radiator degradation test. We think it's just

the way it goes through an attitude at a certain atmospheric affect, what little there is.

04 02 42 59 CC

Okay.

04 02 43 10 CDR

That's a pretty good track of our attitude there, and I had - oh, less than one pulse in that direction in pitch, and you can see what happened.

04 02 43 20 CC

Okay. We'll get a little more accurate back at it when we take a look at this strip chart.

04 02 43 25 CDR

Right. That's what I'd like to have you take note of.

04 02 43 27 CC

Okay.

04 02 43 53 CC

Apollo 7, Houston. We'd like to have you turn your O<sub>2</sub> fans tank 2 ON for 3 minutes.

04 02 43 59 IMP

Roger. ON.

04 02 44 04 IMP

I finished the hydrogen stratification test, and it was about like the first one. There was a slightly noticeable pressure decrease when I turned the fans on, on the order of maybe 2 psi, something like that, and it's stabilized out right here.

04 02 44 30 CC

Okay. Real fine, Walt.

04 02 44 32 CDR

Jack, note the pitch rate right now. It is decreasing, yet I have not turned any pitch pulses in, and there are no thrusters firing. It's a good pass to make note of what we're talking about.

04 02 44 48 CC Okay. We got it. We'll look at it real close.

04 02 44 50 CDR Okay. There were no pitch pulses at that point.

04 02 45 01 CDR We've been noting this all during the flight and thought on this pass to get a record on it. Note the pitch rate is decreasing all the time.

04 02 45 12 CC Okay. We'll really take a good look at it.

04 02 45 14 CDR Okay. This is something we had a heck of a time trying to explain to ourselves. It was pitching in the right direction, so I wasn't going to take it out. It's almost going to pitch zero.

04 02 45 41 CDR There was no IVA during that either, by the way.

04 02 45 44 CC Okay. Copy that. It sounds like you got a built-in ORB rate torquer there.

04 02 45 48 CDR Yes. See there. It's almost zero pitch. I haven't done a thing to it. In fact, I've got to do some more pitching to get up to the 326.

04 02 45 57 CC Roger. That's what we're looking -

04 02 45 58 CDR ... That's two more.

04 02 46 16 CDR We knew what was heating us up during the radiator degradation test. We were going through these kind of attitudes and had to work to get through them.

04 02 46 25 CC Copy. We still were nominal on fuel during that whole test.

04 02 46 29 CDR Roger. Understand. But what we're telling you is about like this. I put three pulses, and it's back to zero again.

04 02 46 38 CC Roger. --

04 02 46 39 CDR ...

04 02 46 42 LMP Hey, Jack, being nominal on that test implies that the three points were present. Donn and I - on numerous tries, the simulator ran well below the nominal fuel usage on that thing where there were no torques.

04 02 47 01 CC That's real fine information, Walt.

04 02 47 05 CDR I put three more pulses in.

04 02 47 28 CDR Houston, do you still read?

04 02 47 30 CC Roger. We are still reading you, Wally.

04 02 47 32 CDR That's a zero again with no pulses.

04 02 47 39 CDR You'll have some fun reading this one. Over.

04 02 47 44 CC Say again.

04 02 47 45 CDR You'll have some fun reducing the data on this one.

04 02 47 50 CC We have people busy on it, and we are watching it right here.

04 02 47 54 CDR That's it. We think it is kind of an interesting phenomenon. I'm back to zero again. ... The best exercise in rocketed direction ...

04 02 48 09 CDR Two more pulses.

04 02 48 30 CDR And it's back to zero again. ...

04 02 48 44 CDR You might know it's not precise. Canary is much more precise than it is in a similar area.

04 02 48 50 CC Roger.

04 02 48 54 CDR If you call I'll ... give it to you.

04 02 49 11 IMP Well, I notice from the flight plan that  
60 percent hydrogen test is nominally at 102  
to 103 hours. Are we running pretty much nominal  
there or a little behind or what?

04 02 49 24 CC We are about to lose you here over Antigua. We  
will pick you up at Ascension at 56.  
ASCENSION (REV 63)

04 02 56 46 CC Apollo 7, Houston through Ascension.

04 02 57 59 CC Apollo 7, Houston through Ascension.

04 02 58 06 CDR Roger. Loud and clear.

04 02 58 07 CC Okay. You're loud and clear. Wally, on this  
pitch rate: it would help us out a little  
bit - we could get a little bit more data - if  
you would put your GDC on FDAI number 1.

04 02 58 19 CDR What we had was right at 90 degrees. We're  
only locked into a deadband now, Jack. We're  
right about - pitched up at 090, straight up.

04 02 58 35 CC Okay. Copy. We get better data on that pitch  
rate for - on telemetry if we can put the GDC  
on FDAI number 1.

04 02 58 46 CDR I see. Okay. Next time we see it, we'll do  
that.

04 02 58 50 CC Okay, and -

04 02 58 56 CDR It appears that, apparently, we had the space-  
craft pointed straight up, the command on the

X-axis this morning, away from the earth on the radial.

04 02 59 05 CC You say that's when it occurred, when the X-axis was pointed away from the earth?

04 02 59 09 CDR That's the way it was this time, and that's the way it seems to be in the past.

04 02 59 13 CC Okay. Real fine. That gives us a good clue.

04 02 59 15 SC It's not active now, CAP COMM?

04 02 59 18 CDR No. It's rotated around now.

04 02 59 22 CC Okay. Has it quit now, Wally?

04 02 59 26 CDR That's affirm. We're now about 140 degrees local vertical.

04 02 59 30 CC Okay. Real fine. And relative to Walt's question on the hydrogen usage, we figure you're about 1 pound above nominal.

04 02 59 42 IMP Roger. And we look like we are even better off with oxygen.

04 02 59 46 CC That's affirmative.

04 03 02 21 CC Apollo 7, Houston. One minute LOS Ascension; Tanansrive at 99 plus 13.

04 03 02 28 IMP Roger. Jack, did the doctor ever say anything about using this antibiotic as a preventative medicine up here?

04 03 02 38 CC Stand by.

04 03 02 57 CC Okay. Walt, on that question: there is really not any need to use any of the antibiotic; they don't feel that would help or cure a cold.

04 03 03 12 IMP Well, so far, I've been able to resist pretty much getting one, but Donn's coming down - if there's some way I could hold it off, I would just as soon take the pill. Or do they just want me to go ahead and catch it, then treat it?

04 03 03 21 CC Okay. We'll pick you up over Tananarive.  
TANANARIVE (REV 63)

04 03 13 51 CC Apollo 7, Houston through Tananarive.

04 03 13 55 IMP Roger. Jack, --

04 03 13 59 CC You're five-by --

04 03 14 00 IMP We're powered down in the drifting flight configuration.

04 03 14 04 CC Roger. Copy that. We'll be standing by.

04 03 15 22 IMP We're going to activate the evaporator again ...  
CARNARVON (REV 63)

04 03 29 17 CC Apollo 7, Houston through Carnarvon.

04 03 29 22 CDR Roger. Loud and clear.

04 03 29 23 CC Roger. Five-by. We've been going over some of the results of the keying test we did over the States. It leads us to two questions we would like to ask. One, was the PMP in AUXILIARY?

04 03 29 39 IMP Negative.

04 03 29 42 CC And the next question, was the keying done with the panel switch or the mike button?

04 03 29 50 IMP I keyed with the mike button on my control head.

04 03 29 55 CC Okay. Thank you.

04 03 29 58 CDR Jack, we have one for you.

04 03 30 00 CC Go ahead.

04 03 30 02 CDR Okay. We powered down, and just checking over my CAL's, it would appear that the SPS logic bus 3 switch might help. Does it?

04 03 30 14 CC Would you say again? We didn't copy, Wally.

04 03 30 18 CDR Okay. I said I've got the SPS powered down.

04 03 30 20 CC Roger.

04 03 30 21 CDR Does the SPS logic bus 3 save us any power?

04 03 30 27 CC Okay. Stand by.

04 03 30 28 CDR -- when added to the rest?

04 03 30 33 CC Okay. Stand by. We'll get you the answer.

04 03 30 46 CDR Roger. Log 15 clicks of water for the CMP.

04 03 30 51 CC Okay. Will do.

04 03 30 54 LMP And, Jack, when you get a chance, can we get an update on the RCS profile I have on board?

04 03 31 04 CC Okay. In work.

04 03 31 07 LMP Thank you.

04 03 31 51 CC Walt, your RCS reading on your plot will be 714.

04 03 32 00 LMP Roger. 714.

04 03 32 36 CC Apollo 7, could you get us some results of your scanning telescope test --

04 03 32 37 LMP -- when we operate the IMP on AUXILIARY, we seem to be ... a pretty good check on that, haven't we?

04 03 32 48 CC I'm sorry, Walt, I was transmitting something to you at the same time. Can you say again?

04 03 32 54 LMP Roger. We have, coming up over Carnarvon, PMP powered AUXILIARY with an S-band check. Have we already satisfied some of those by an earlier operation in AUXILIARY for some time?

04 03 33 18 LMP I guess I'm asking do you want to continue that test; should I plan on PMP AUXILIARY; and what were you saying when I transmitted?

04 03 33 27 CC Okay. Walt, we do want to put the PMP to AUXILIARY. That puts us in our PCM down on the FM.

04 03 33 38 CC Put your —

04 03 33 40 LMP ... a long time early in the flight like that?

04 03 33 58 CC Walt, we'll hit you at Guam at 99 plus 39 and Hawaii at 99 plus 53.

04 03 34 07 LMP Okay. And give me a call if you want PMP powered AUXILIARY.

04 03 34 12 CC Roger. We want the PMP on AUXILIARY. That's just the configuration for the test.

GUAM (REV 63)

04 03 39 46 CC Apollo 7, Houston through Guam.

04 03 39 57 CDR Roger. I read you.

04 03 39 58 CC Roger. Five-by. We would like you to put your PMP power to AUX.

04 03 40 06 SC Roger. AUX ...

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04 03 40 18 CC I didn't copy that last one. Say again.

04 03 41 01 CC Apollo 7, Houston. Looks like we're getting about two-by on the COMM here at Guam. After the COMM test at Hawaii, we would like to have you comment briefly on the results of the scanning telescopes star count.

04 03 42 05 CC Guam M and O, Houston CAP COMM.

04 03 44 50 CC Apollo 7, Houston.

04 03 44 52 LMP Roger. How do you read AUXILIARY PMP?

04 03 44 56 CC I read you five-by, Walt; and relative to Wally's question on a SCS logics bus, it will save us about 2 amps, and you can turn that switch off if you'd like.

04 03 45 08 LMP Okay. We'll turn it off; it'll cool it down in here a little bit. It's been getting warm and stuffy.

04 03 45 13 CC Roger. Copy that.

04 03 45 26 LMP You wouldn't believe the way we're eating today.

04 03 45 30 CC I bet I would.

04 03 46 05 LMP When things get boring, we play IVA.

04 03 46 10 CC Roger. Copy that. You're 1 minute LOS Guam; Hawaii at 99 plus 53.

04 03 46 18 LMP Roger.

HAWAII through TEXAS (REV 63)

04 03 54 50 CC Apollo 7, Houston through Hawaii.

04 03 56 21 CC Apollo 7, Houston through Hawaii.

○

04 03 57 37 CC  
 04 03 57 39 CDR  
 04 03 57 45 CC  
 04 03 58 10 CDR  
 04 03 58 14 CDR

Apollo 7, Houston through Hawaii.  
 Roger. Loud and clear. We just got ...  
 Okay. You're loud and clear here. Go ahead.  
 ...  
 Number 2 window is in real good shape, but the  
 perimeter - it's fogging around the perimeter  
 particularly in the upper portion. About - oh,  
 it's very thick ... about half an inch in from  
 the perimeter and thins out to a perfectly good,  
 clear window. The hatch window has never been  
 usable since shortly after insertion into  
 orbit. Large condensation inside now in the  
 inner surface of the inner pane; and the center  
 of the window, a circle about 5 inches in diam-  
 eter, looks like snowflake crystals all across  
 it; it's actually opaque.

○

04 03 59 04 LMP

Window number 4 ... fogging ... right around  
 the edge, toward the inner surface of the inner  
 pane - outer pane towards the minus Z axis,  
 primarily, including from the edge, and it's  
 ... half inch in worst spots, but it's still  
 a perfectly --

04 04 00 01 CC

Okay. Apollo 7, Houston. We lost you on the  
 handover there. We will pick you up with the  
 last half of window 4 when we get good contact  
 with the Huntsville.

○

4167

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04 04 00 14 CDR You got one through three?

04 04 00 16 CC Roger. We copy window 3. We got cut off just as you started to give us window 4.

04 04 00 26 CDR Roger. We just broke the century hour.

04 04 00 39 LMP Do you read, Houston?

04 04 00 40 CC Okay. Read you five-by. We are ready to copy window 4.

04 04 00 45 LMP Okay. Did you hear Wally's remark? We just broke 100 hours.

04 04 00 50 CC Roger. We got that.

04 04 00 53 LMP Okay. Window number 4 has started to occlude. It's on the edge and working its way inward.

At the worst spot now three-eighths to one-half - -

04 04 01 10 CC Okay. Copy that.

04 04 01 13 CDR Okay ... photography. The window number 5 starting to get some kind of a film on the inner surface of the outer pane, but you have to look pretty close to see it. It is still perfectly visible for photography.

04 04 01 34 LMP Okay. Windows 2 and 4 are sufficient for star work, but the other ones are not.

04 04 01 41 CC Okay. Copy that.

04 04 01 47 CDR Jack, yesterday was the fifth anniversary of the entry of D. Eisele and W. Cunningham into this program.

04 04 01 58 CC We copy that anniversary.

O

O

468

04 04 02 04 IMP Is it safe for champagne?

04 04 02 09 CC Say again.

04 04 02 12 CDR ...

04 04 02 16 CC We didn't copy that, Wally. Could you give us window number 1 again?

04 04 02 23 CDR I think the window is getting worse, clouding the vision due to the overboard dump. The particles depending on the spacecraft attitude seemed to bounce off it or collect on it.

04 04 02 42 CDR Do you read?

04 04 02 43 CC Okay. Got it.

04 04 02 46 CDR My question was is Deke Slayton still in town?

04 04 02 51 CC Okay. Our COMM with Huntsville is deteriorated. We're not reading you too well. We'll pick you up over the States.

04 04 02 58 CDR Okay.

04 04 05 52 CC Apollo 7, Houston.

04 04 05 55 CDR Roger. Loud and clear.

04 04 05 56 CC You're loud and clear, too. Would you get your FMP switch to NORMAL?

04 04 06 20 CC And then we would like to have you configure for the relay mode.

04 04 06 24 CDR Roger.

04 04 07 01 CDR Like to get a readout on the GBC versus CMC.

04 04 07 08 CC Apollo 7, Houston. Are you configured for the relay test here at Guaymas?

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04 04 07 13 IMP Apollo 7, do you read?  
04 04 07 17 CC Roger. Apollo 7, do you read? Houston.  
04 04 07 25 IMP Houston, Apollo 7. Over.  
04 04 07 30 CC Go ahead.  
04 04 07 42 IMP We haven't configured yet, Houston.  
04 04 07 46 CC Roger. Copy. I understand you have not configured for the relay test.  
04 04 07 49 IMP Roger. I haven't had the cue yet.  
04 04 07 53 CC Okay. Would you put your PMP power switch to NORMAL and configure for the relay test.  
04 04 07 58 IMP Roger. Configured.

HAWAII through TEXAS (REV 64)

04 04 08 00 CDR Power PMP NORMAL and is configured for relay test. I ran out of it in order to get the contact with you again. I'm at Duplex A now and configured to relay.  
04 04 08 09 CC Roger. I understand, Apollo 7. You're configured for relay test. We're not performing the relay test.  
04 04 08 35 CC Roger. Apollo 7, Houston. Counting one, two, three, four, five - five, four, three, two, one. Performing the relay test.  
04 04 09 10 CC Houston performing the relay test - one, two, three, four, five - five, four, three, two, one.

47

04 04 10 22 CC This is Houston performing the relay test. One, two, three, four, five, six, seven, eight, nine, nine, eight, seven, six, five, four, three, two, one.

04 04 11 44 CC Apollo 7, Houston.

04 04 11 46 LMP Roger. We copied your RELAY mode check. How did it work?

04 04 11 50 CC Well, there is some question on it. Can you confirm that you were in the RELAY mode per your COMM slide rule?

04 04 11 57 CDR That's affirmative.

04 04 11 59 CC Okay. Fine. Thank you.

04 04 12 03 LMP Did it work, or did it not?

04 04 12 07 CC Ground didn't copy the relay so we had some question there.

04 04 12 10 CDR Roger. We read you.

04 04 13 11 LMP Magazine 8 frame 69: west coast of Southern Mexico.

04 04 13 18 CC Okay. Copy that.  
TANANARIVE (REV 64)

04 04 48 21 CC Apollo 7, Houston.

04 04 48 59 CC Apollo 7, Houston.

04 04 50 02 CC Apollo 7, Houston.

04 04 50 27 CC Apollo 7, Houston.

04 04 51 16 CC Apollo 7, Houston.

471

04 04 51 44 CC Apollo 7, Houston. Transmitting in the blind. We're trying to find a piece of the data for the radiator degradation test around 96 hours. This was when we were considering terminating the test, and Walt, can you confirm tape recorder ON at that time?

04 04 52 33 IMP Apollo 7. Stand by.

04 04 52 41 CT Tananarive M and O. They rogered, Houston CAP COMM.

04 04 52 50 IMP ... right on the minute.

04 04 52 55 CC Roger. Understand you did have it on. Thank you.

04 04 52 59 IMP That's affirmative.

04 04 53 23 CC Apollo 7, Houston. One minute LOS; Mercury at 11.

MERCURY (REV 64)

04 05 11 52 CC Apollo 7, Houston, Mercury. Standing by.

04 05 11 57 CDR Roger.

04 05 11 59 IMP Say, Ron, I wanted to confirm that we rechecked our switches for the RELAY mode, and everything was configured appropriately. We have --

04 05 12 20 CC Apollo 7, Houston.

04 05 12 26 IMP Do you read, Ron?

04 05 12 27 CC I missed part of your comments there, but the RELAY mode worked okay.

04 05 12 33 IMP Oh, it did work okay? Jack indicated that it wasn't conclusive.

04 05 12 40 CC No, that was our mistake; it worked okay.

472

04 05 12 44 IMP Okay. And I understand we have the same check coming up in a couple of hours?

04 05 12 53 CC Say again. What check?

04 05 12 55 IMP We have the same thing coming up for another check over Hawaii in a couple of hours, and I wanted to confirm that we did turn on the tape recorder for all those data points. And one of them - we were 3 or 4 minutes late on the radiator test, but the one in question that you asked about I believe we turned on right on the dot.

04 05 13 15 CC Okay. Roger. Thank you.

GUAM (REV 64)

04 05 14 46 CC Apollo 7, Houston. Opposite omni.

04 05 15 46 CDR We're on the frame 75 magazine ... 0. Orion at sunrise. Props by Eisele.

04 05 16 00 CC Say again, Wally. Not too clear there.

04 05 16 08 CDR Frame 75 magazine negative ... 0, Sierra ... constellation Orion at sunrise. Props by Eisele.

04 05 16 22 CC Roger. Copy.

HAWAII (REV 64)

04 05 29 26 CC Apollo 7, Houston. One line flight plan update.

04 05 29 37 CDR Go ahead.

04 05 29 38 CC Roger. At 102 plus 20, delete CRYO test at this time.

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04 05 29 51 CDR Roger. We did it earlier at 50 percent.

04 05 29 55 CC Roger. We're estimating 60 - you'll have about 60 percent O<sub>2</sub> at about 134 hours, something like that. We'll update later on.

04 05 30 06 CDR Roger. The O<sub>2</sub> will be done later, you mean?

04 05 30 08 CC That's affirmative.

04 05 30 10 LMP Hey, Ron, we can just have a standing flight plan item on that. It's supposed to be done at 60 percent, so we'll just do it when it gets to 60 plus or minus 5.

04 05 30 19 CC Sounds good.

04 05 30 25 CDR Can we have a chart update too, Ron?

04 05 30 29 CC Say again.

04 05 30 32 CDR A chart update.

04 05 30 35 CC Wilco. Stand by.

04 05 31 29 CC Apollo 7, Houston. I have your map update.

04 05 31 34 CDR Go ahead.

04 05 31 35 CC Roger. REV 64, GET 101 plus 06 plus 52, longitude 106.8 east, right ascension 04 plus 54.

04 05 31 59 CDR Roger. Thank you.

04 05 32 57 CC Apollo 7, Houston. We found the data in question on the RAD test.

04 05 33 03 LMP Roger. Thank you.  
HUNTSVILLE (REV 64)

04 05 34 37 CT Huntsville. Two-way lock signal too weak for valid range.

47

04 05 34 53 CT Huntsville. Two-way lock. Valid range.

04 05 38 48 LMP Houston, Apollo 7.

04 05 38 50 CC Houston. Go.

04 05 38 52 LMP Roger. Log the CMP 15 clicks on the water gun; the LMP, 30 clicks.

04 05 39 03 CC Awful garbled, Walt. Say again.

04 05 39 08 LMP Roger. Give the CMP 15 clicks on the water gun and the LMP 30 clicks.

04 05 39 17 CC I can't read you here. We'll pick that - pick you up in Guaymas in about 2 minutes.

GUAYMAS (REV 64)

04 05 40 08 CC Apollo 7, Houston. Say again your last translation now.

04 05 40 13 LMP Roger. Ron, I was just logging some water; 15 clicks for IMP and 30 clicks for the - excuse me, 15 clicks for the CMP and 30 clicks for the IMP.

04 05 40 26 CC Roger. Thank you.

04 05 42 59 CC Thirty seconds LOS; Tananarive at 20.

TANANARIVE (REV 65)

04 06 21 15 CC Apollo 7, Houston through Tananarive. Standing by.

04 06 27 46 CC Apollo 7, Houston. Two minutes to LOS Tananarive; Mercury at 43.

MERCURY (REV 65)

04 06 44 26 CC Apollo 7, Houston, Mercury. Standing by.

04 06 44 30 CDR Roger. Loud and clear.

04 06 44 32 CC Roger. The same.

04 06 45 57 CDR Houston, Apollo 7.

04 06 45 58 CC Houston. Go.

04 06 46 00 CDR Roger. You can give Walt credit for 12 clicks of water and give me 30.

04 06 46 08 CC Wilco.

04 06 46 10 CDR And the water's tasting very good, so we'll chlorinate one more time and see how bad it gets, and that may be the last dose.

04 06 46 19 CC I understand what you're saying.

04 06 46 22 CDR Okay. Thank you.

04 06 46 31 CC Apollo 7, Houston.

04 06 46 51 CDR ... and see where we stand.

04 06 47 04 CC Apollo 7, Houston. You're unreadable.

04 06 47 08 CDR We predict that we should chlorinate every other day so we'll see how that works out.

04 06 47 18 IMP Is Hawaii in the RELAY mode?

04 06 47 22 CC Walt, that's affirmative. Configure for RELAY mode prior to 103 plus 02.

04 06 47 31 IMP Wilco. Okay. We'll be on Duplex A as we go over the hill now.

04 06 47 37 CC Affirmative. And Walt, we'd like you to cycle O<sub>2</sub> tank 2 fans ON for 5 minutes, then OFF.

430

04 06 47 51 IMP Then what?

04 06 48 01 CC Apollo 7, Houston. Opposite omni.

04 06 48 04 CDR Ron, we just made a big discovery. I just turned the O<sub>2</sub> fan number 2 down ON, and it started our DET in the lower equipment bay.

04 06 48 17 CC Beautiful.

04 06 48 23 CDR Did you read that?

04 06 48 25 CC Affirmative. DET in the LEB started when you turned the fans on.

04 06 48 30 CDR That's correct.

04 06 48 37 CDR Always excitement up here. That lends credence to the theory that it does touch the spacecraft.

04 06 48 49 CC Say your last comment, Wally.

04 06 48 51 CDR That lends credence to the theory that the fans do pulse the spacecraft.

04 06 49 01 CC Roger. We - we'll read it back on the tape. I still didn't get you.

04 06 49 46 CC Apollo 7, Houston.

04 06 49 49 SC Go ahead.

04 06 49 51 CC Opposite omni.

04 06 51 11 CC Apollo 7, Houston. Thirty seconds LOS; Hawaii at 02.

04 06 51 16 CDR Roger.

HAWAII (REV 65)

04 07 02 22 CC Apollo 7, Houston.

04 07 02 26 CDR Roger. We read you five square.

04 07 02 29 CC Roger. You're a little weak.

04 07 02 38 CC Apollo 7, Houston. Would you like to try it again? How do you read?

04 07 03 05 CC Apollo 7, Houston.

04 07 03 15 CC Apollo 7, Houston.

04 07 03 20 CDR Roger.

04 07 03 23 CC Roger. You're not coming back very well. Break Hawaii M and O. S-band uplink inhibit.

04 07 03 40 CC Apollo 7, Houston for a backup voice check. I'm transmitting up to you on 259.7. You should be transmitting my voice back down to Hawaii USB link.

04 07 04 31 CC Apollo 7, Houston CAP COMM transmitting for a voice RELAY mode. Transmitting up to you on 259.7. My voice should be coming back through the spacecraft and back down to Hawaii on the USB.

04 07 05 11 CC Apollo 7, Houston. Request up-telemetry COMMAND to RESET momentarily and then NORMAL at LOS.

04 07 05 21 CDR Roger. Do you read, Ron?

04 07 05 23 CC Affirmative. Loud and clear now.

04 07 05 25 CDR Okay. You're transmitting okay. Did you get a relay check?

04 07 05 31 CC I still haven't got a reading here yet. I think it's okay.

04 07 05 34 CDR Okay. We heard you. I'll call. Hello, this is Wally. Hello, this is Wally.

04 07 05 43 CC Go ahead.

04 07 05 44 CDR Did you call it a COMSAT?

04 07 05 50 CC A time check?

04 07 05 52 CDR No, did you call it a COMSAT?

04 07 06 00 CC I can't understand. Say again, Wally.

04 07 06 03 CDR Did you call it COMSAT?

04 07 06 06 CC Roger. You are a COMSAT.

04 07 06 10 CDR Roger.

04 07 06 13 CC I'm a little dense.

HUNTSVILLE (REV 65)

04 07 09 05 CT Huntsville two-way lock valid range.

04 07 09 13 CC Apollo 7, Houston. One minute LOS break. Be advised voice relay quality was good.

04 07 12 33 CC Apollo 7, Houston. Tananarive at 54.

TANANARIVE (REV 66)

04 07 55 12 CC Apollo 7, Houston through Tananarive. Standing by.

04 07 56 55 CC Apollo 7, Houston. Standing by.

04 07 58 15 CC Apollo 7, Houston through Tananarive.

04 08 01 10 CC Apollo 7, Houston, Tananarive. Mercury at 18.

04 08 02 20 CC Apollo 7, Houston. No joy Tananarive; Mercury at 18.

MERCURY (REV 66)

04 08 18 34 CC Apollo 7, Houston through Mercury.

04 08 19 04 CC Apollo 7, Houston.

04 08 19 46 CC Apollo 7, Houston.

04 08 19 59 CC Mercury M and O, Houston CAP COMM. Are we getting out to you?

04 08 20 38 CC Apollo 7, Houston.

04 08 21 14 CC Apollo 7, Houston. Transmitting in the blind. Flight plan update at 106 plus 00, O<sub>2</sub> fuel cell purge.

04 08 23 18 CC Apollo 7, Houston.

04 08 24 56 CC Apollo 7, Houston. LOS Mercury; Hawaii at 36.  
HAWAII (REV 66)

04 08 36 42 CC Apollo 7, Houston through Hawaii.

04 08 37 23 CC Apollo 7, Houston through Hawaii.

04 08 37 47 CC Apollo 7, Houston.

04 08 38 09 CC Apollo 7, Houston.

04 08 38 47 CC Apollo 7, Houston.

04 08 38 49 LMP Roger. Houston, Apollo 7. Do you read me?

04 08 38 52 CC Roger. Read you loud and clear now.

04 08 38 56 LMP Okay. Did you try to contact us over Mercury?

04 08 38 59 CC Affirmative.

04 08 39 02 LMP Sorry about that. I didn't get back in the right configuration after that reel check.

04 08 39 07 CC Yes, we were switching around here and were going to try that in the air at Hawaii if we didn't catch you. Okay. Walt, I've got a block data for you and also would like some onboard readouts.

04 08 40 02 CC Apollo 7, Houston. Do you read?

412

04 08 40 29 CC Apollo 7, Houston.

04 08 40 59 CC Apollo 7, Houston.

04 08 41 42 CC Apollo 7, Houston.

04 08 41 49 CC Apollo 7, Houston.

04 08 42 17 CC Apollo 7, Houston. We'll pick you up in the Mercury at 104 - belay that, at 105 52.

MERCURY (REV 67)

04 09 52 45 CC Apollo 7, Houston through Mercury.

04 09 52 48 IMP Roger. Loud and clear.

04 09 52 51 CC Roger. The same, Walt.

04 09 52 53 IMP We're going to take the block data this pass?

04 09 52 57 CC Roger. Block data to follow. 069 dash 3 Charlie plus 190 plus 1300 108 plus 47 plus 28 2888, 070 dash Alfa Charlie plus 043 minus 0230 109 plus 37 plus 43 4082, 071 dash Alfa Charlie plus 128 minus 0320 111 plus 10 plus 33 3808, 072 dash 2 Alfa plus 255 minus 0270 112 plus 48 plus 12 3484, 073 dash 1 Bravo plus 210 minus 0615 114 plus 13 plus 04 3590, 074 dash 1 Bravo plus 279 minus 0645 115 plus 48 plus 12 3455. Houston, over.

04 09 55 21 IMP Roger. While I read that, could you get someone to check our main O<sub>2</sub> rates?

04 09 55 29 CC Roger. We're standing by.

04 09 55 32 IMP Okay. Roger. This is Charlie 69 0693 Charlie plus 190 plus 1300 108 47 28 2888, 070 Alfa

Charlie plus 043 minus 230 109 3743 4082, 071  
 Alfa Charlie plus 128 minus 0320 111 plus 10  
 plus 33 3808, 072 dash 2 Alfa plus 255 minus 0270  
 112 48 12 3484, 073 dash 1 Bravo plus 210 minus  
 0615 114 13 04 3590, 074 dash 1 Bravo plus 279  
 minus 0645 115 48 12.

04 09 56 48 CC Apollo 7, Houston. Your readback is correct.  
 Correct pressure now is 104.

04 09 56 56 IMP Roger. I'll switch rings and give another one.

04 09 57 01 CC 103.

04 09 57 03 IMP 103. We are GO on ECS redundant, and we've just  
 changed our canister now.

04 09 57 10 CC Roger. And flight plan update lock and fuel cell  
 O<sub>2</sub> purge at 106 plus 00.

04 09 57 25 IMP Roger. Are we coming up LOS?

04 09 57 28 CC Roger. About 1 minute to LOS. I can give you  
 a figure 3 dash 1 on your RCS update, if you want.

04 09 57 42 IMP Go ahead.

04 09 57 43 CC Roger. At 104 hours, you have a total of 715,  
 your SCS redline is 583. Your DAP redline  
 520. Hybrid redline 247, and those are points  
 you'll have to plot on your curve.

04 09 58 08 IMP Very good. Look like ...

04 09 58 14 CC Yeah. It's looking good. Be advised that quad A,  
 as far as the quad redline, is just right on  
 the SCS redline; all others are in good shape.

04 09 58 25 LMP Roger. What happened to your transmission at Hawaii? Did you break up on land line?

04 09 58 30 CC Affirmative. Broke up on land line.

04 09 58 37 LMP Okay. Standing by for Redstone.

REDSTONE (REV 67)

04 10 25 04 CC Apollo 7, Houston through Redstone.

04 10 25 07 LMP Roger, Houston. Five-by-five.

04 10 25 10 CC Roger. Loud and clear. Walt, I have some on-board readouts I'd like to get.

04 10 25 17 LMP Go ahead.

04 10 25 18 CC Roger. SPS fuel and oxidizer quantity and the oxidizer unbalance, if any.

04 10 25 28 LMP Our FUGS is not working I was told, so I haven't paid any attention to it, but I show the oxidizer unbalance reading a minus 300 or decreased 300, and it kinda jumps around during a burn. I don't think it means anything at all. The SPS quantity is remaining 17.15 percent oxidizer, 18.2 percent fuel. Over.

04 10 25 58 CC Roger. Copy. And your service module RCS propellant quantities?

04 10 26 04 CC And your batt C volts, while you're over there.

04 10 26 21 LMP Houston, do you read now?

04 10 26 24 CC I missed it. Say again.

04 10 26 26 LMP Okay. Ring A is about 51 percent.

04 10 26 32 CC Roger.

04 10 26 35 LMP Ring C, 56 percent.

04 10 26 38 CC Roger.

04 10 26 40 LMP Ring D, 62 percent.

04 10 26 45 CC Roger.

04 10 26 47 LMP And B we don't count.

04 10 26 49 CC Concur.

04 10 26 52 CC Now, your batt C volts and your systems test meters 5 and 6, A through D, when you get a chance.

04 10 27 03 LMP Roger. Batt bus A is reading 36 volts; batt bus B is reading 36.2 volts; 5 C is 5 volts; 5 D is 5 volts; 6 D is 5 volts; 6 C is 5 volts; 6 B is 5 volts; 6 A is 5 volts.

04 10 27 39 CC Roger. Copy. All systems tests are 5 volts, and batt C we still need.

04 10 27 45 LMP Okay. Batt C coming. Batt C shows 36.3 volts, and our present plans are not to heat the command module RCS prior to deorbit.

04 10 27 58 CC We concur so far.

04 10 28 07 LMP Any late breaking news in Houston, Ron?

04 10 28 10 CC Say again.

04 10 28 13 LMP What's the latest news in Houston?

04 10 28 17 CC I have Lima Sierra for you.

04 10 28 23 LMP Well, go ahead ...

04 10 28 27 CC Roger. Lima Sierra, 072/061. And I have a Sierra Fox Trot at 075.

04 10 28 47 LMP Sierra Fox Trot at 075? First there was Lima Sierra 072/061?

04 10 28 55 CC Roger.

04 10 29 01 LMP 6972/69.

04 10 29 08 CC Apollo 7. Apollo 7.

04 10 29 14 CC Apollo 7, Houston. Request cycle O<sub>2</sub> fan for 5 minutes in OFF.

04 10 29 21 LMP Okay. I've - we've been leaving number 1 in AUTO; is that your druthers?

04 10 29 28 CC We started out the other way and then Donn had it the other way, so it's -

04 10 29 40 LMP It's in AUTO, and the other one cycle on your callouts, right?

04 10 29 43 CC That's affirmative. So you have tank 1 in AUTO and tank 2 fans cycling now.

04 10 29 50 LMP ON for 5 minutes.

04 10 30 02 LMP Purge on time.

04 10 30 09 CC Apollo 7, Houston. Opposite omni.

04 10 30 51 CC 7, Houston. We have 1 minute to LOS. Our O<sub>2</sub> is about 63 pounds above the nominal flight plan at this time, and the H<sub>2</sub> is about a half a pound above the nominal flight plan. So we're in good shape.

04 10 31 08 LMP Very good.

ASCENSION (REV 68)

04 10 52 56 CC Apollo 7, Houston, Ascension. Standing by.

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04 10 53 01 CDR Roger. Thank you, Evans. Any more local news around there to report?

04 10 53 11 CC Roger. I can give you - looks like the end of the mission now predicted. The word I have, 25 percent  $O_2$  left, and about 6.8 percent  $H_2$  left.

04 10 53 30 CDR Roger. I understand; that sounds good. About what I predicted on the hydrogen, I think, isn't it?

04 10 53 39 CC I think so. On the fuel cells, performance is right down the middle. Purging is turning out nominal. Looks like we'll plan to purge  $O_2$  immediately prior to the SPS burn, and this should improve the load-sharing characteristics between the fuel cell and the battery.

0

04 10 54 06 CDR Roger. I understand, and is the SPS burn nominally what it is in the flight plan?

04 10 54 14 CC The SPS burns are still per flight plans, yes.

04 10 54 22 CDR Roger. Thank you. Did they tell you we're purging water before each SPS burn, too?

04 10 54 31 CC Say again, Wally.

04 10 54 33 CDR I don't know whether you got the report or not, but there's vast water collecting all over the plumbing on the ECS, and it forms rather large blobs that we're going to have to take off before we get a burn going again ... that's all.

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04 10 54 52 CC Roger. I understand you want to collect all the water at one place.

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04 10 54 57 CDR Yes, not on the aft bulkhead!

04 10 54 59 CC Right.

04 10 55 02 CDR ... burn checklist. Did you get to see the TV picture where the ... kind of sharp today.

04 10 55 16 CC Yes, we did. It came through real good.

04 10 55 19 CDR Very good. How has that onboard TV been showing up? Could you detect our motion, or are we moving too fast, or what?

04 10 55 31 CC No, it's real good. If you have a real fast movement, you get a little bit of a blur, but just in the floating movements. It turns out real fine, real fine. It's amazing; it's much better than anything I've ever seen in ground testing.

04 10 55 49 CDR Good deal. Is this taped during the ... so we can see it?

04 10 55 55 CC Yes, it's taped.

04 10 55 59 CDR Yes, okay.

04 10 56 02 CDR Donn said he ... but 6 years ago he got to me that way.

04 10 56 09 CC Missed that, Wally.

04 10 56 11 CDR Six years ago, he asked me that question.

04 10 56 17 CMP Only I had a tape on board, and I was about 3 minutes out on an Atlas.

04 10 56 25 CC Okay.

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04 10 57 05 CDR You still there, Ron?

04 10 57 06 CC Affirm.

04 10 57 08 CDR What's the status of our tape recorder; have you dumped it recently?

04 10 57 12 CC Roger. The last two passes we had over the Mercury. It wasn't quite as good. We're checking it out at Redstone now. It was good up until that time.

04 10 57 22 CDR Roger. How about a chart update if you have time?

04 10 57 25 CC Roger.

04 10 57 56 CC Walt, can you check - your tape recorder forward switch in FORWARD?

04 10 58 01 CDR It is.

04 10 58 03 CC Roger. And here's your flight plan update.

04 10 58 06 CDR Go ahead.

04 10 58 08 CC REV 68, GET is note 107 plus 01 plus 55, longitude 15.9 east, right ascension 04 plus 47.

MERCURY (REV 68)

04 11 26 56 CC Apollo 7, Houston.

04 11 27 19 CC Apollo 7, Houston through Mercury.

04 11 27 26 CDR Roger, Houston. Loud and clear.

04 11 27 29 CC Roger. I have a battery status if you're ready to copy.

04 11 27 45 CC Apollo 7, Houston. Opposite omni.

04 11 27 52 CDR Go ahead with the batteries.

04 11 27 56 CC Roger. You presently have three; in A 32.7, in B 30.2, in C 39.5 ampere hours.

04 11 28 12 CDR Roger.

04 11 28 14 CC For pre-deorbit, you will have in A 24.8, in B 22.2, in C 39.5, for total of 86.5 ampere hours.

04 11 28 36 CDR Roger.

04 11 28 38 CC Predicted post finding time will be 35 hours.

04 11 28 44 IMP Roger. Understand, Ron. The only concern I have about battery charge is supporting the battery failure on a hybrid deorbit.

04 11 28 53 CC Roger. We concur. You might be interested: it's believed that we've had a slight change in the battery charger characteristics as a function of altitude, such that the charging voltage at the battery terminals is about two- to three-tenths volts lower than normal, and this would account for the decreased charging current. We're continuing ground testing to better define this anomaly.

04 11 29 32 CDR This was done subsequent to our lift-off?

04 11 29 37 CC Say again, Wally.

04 11 29 42 CDR You say this was done after we took off, Ron?

04 11 29 45 CC That's affirmative.

04 11 29 48 CDR It's good work that they found it out.

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04 11 29 51 CC Yes, right. No additional battery charging is anticipated at this time. We recommend minimizing battery ON time for all burns.

04 11 30 09 CDR That's kind of hard to do, but we'll do it.

04 11 30 13 CC Roger.

04 11 30 19 CDR ... we're going to break up and get Donn on watch shortly. He'll be with you on next call.

04 11 30 28 CC Roger. Understand. Have a good night's sleep.

04 11 30 32 CDR Good night. Ron, did you have psi system power up? We had it written here on the flight plan here at about 107 20.

04 11 30 45 CC Roger. It's in there. We're checking on it right now.

04 11 30 52 IMP We'll hold off on it then, I guess.

04 11 30 56 CDR If you need it, you can get it from Donn Eisele over the next Redstone.

04 11 31 01 CC Roger. There's no problem there. It's just to run the state vector up.

04 11 31 06 CDR Yes.

04 11 31 09 IMP I guess I'd like to still keep an iron in the fire on that battery charge status.

04 11 31 19 CC Affirmative. We're still working on it.

04 11 31 23 IMP Okay.

04 11 31 46 CC Walt, we've got the 101 backup batteries in Downey, and we're running tests on those tonight.

04 11 31 54 IMP Thank you, Ron.  
 GUAM (REV 68)

04 11 35 02 CC Apollo 7, Houston. Opposite omni.

04 11 35 07 CDR There you go -

04 11 35 14 IMP Hell, Ron, tomorrow maybe you can add a Baker-tare update to that.

04 11 35 23 CC Baker-tare?

04 11 35 26 IMP That's the other one I mentioned to you. Plus you gave me that for the Lima Sierra.

04 11 35 37 CC That is after the slant.

04 11 35 41 IMP Oh, Ron, how about the longitude on that chart update? We missed it.

04 11 35 51 CC Roger. Just a second.

04 11 36 09 CC Roger. REV 68.

04 11 36 13 IMP Roger. Go. ... 107 plus 02 55. What's longitude?

04 11 36 23 CC Roger. Longitude 15.9 east, right ascension 04 plus 47.

04 11 36 35 IMP Thank you. 107 02 55 is the time. Right?

04 11 36 38 CC That's Roger. And request batt C readout again; missed it last time.

04 11 36 44 IMP Batt C is 36 1 or 2.

04 11 36 53 CC Roger. 36.4.

04 11 36 56 IMP 36.2.

04 11 36 58 CC 36.2. Roger.

REDSTONE (REV 68)

04 11 58 22 CC Apollo 7, Houston through Redstone.



03 11 58 59 CC Apollo 7, Houston.  
 04 11 59 38 CC Apollo 7, Houston.  
 04 11 59 43 CMP Houston, Apollo 7. I'm reading you.  
 04 11 59 46 CC Roger. Good morning.  
 04 11 59 54 CMP Roger. How are you?  
 04 11 59 58 CC Getting along in good shape. Donn, on this again, I think that Walt gave me batt Bravo instead of Charlie voltage last time. Request batt Charlie voltage.

04 12 00 14 CMP Okay. Stand by 1 minute.  
 04 12 00 17 CC Wilco.  
 04 12 01 19 CC Okay. I wonder how much it would foul them up if they delayed eating until they were on TV.



04 12 01 47 CMP Ron, I read batt C as 36 volts.  
 04 12 01 53 CC Roger. I understand. Batt Charlie 36 volts.  
 04 12 02 01 CMP I think that's down a little; I believe it was about 37 when we first got up here.

04 12 02 07 CC We concur.  
 04 12 04 54 CC Apollo 7, Houston. One minute LOS; Ascension at 23.

04 12 05 01 CMP Roger. Ascension at 23. Understand.  
 ASCENSION (REV 69)

04 12 23 55 CC Apollo 7, Houston, Ascension. Standing by.  
 04 12 24 01 CMP Roger, Houston.  
 04 12 24 03 CC Roger. Loud and clear.  
 04 12 24 13 CMP Ron, would you log me 15 clicks on water, please?



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04 12 24 20 CC I missed that, Donn. Say again.

04 12 24 21 CMP Roger. Fifteen clicks on the water gun.

04 12 24 23 CC Roger. Got it.

04 12 24 25 CMP Okay. I just had a good, solid 8 hours sleep and feel pretty good. I've got a miserable head cold, but other than that, everything's going fine.

04 12 24 39 CC Okay. Sounds good, then.

04 12 24 43 CMP My only concern right now is what's going to happen to my ears when we reentry, but I hope by then I'll get over it some.

04 12 24 53 CC We kind of feel that you will, and we hope, anyhow.

04 12 24 57 CMP I guess we'll cross that when we come to it.

04 12 25 00 CC Roger.

04 12 25 30 CC Apollo 7, Houston.

04 12 25 33 CMP Go.

04 12 25 34 CC Roger. We've had a little concern about the voice quality on the DSE there the last couple of dumps, and what we would like you to do is after this pass go ahead and talk into the tape recorder, mention the time on it, and then give us a time at the next station there, and we can play it back and check it out that way real good.

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04 12 26 00      CMP      Roger. You say you want me to record something on the tape and read the time onto it so you can check it next pass. Is that right?

04 12 26 07      CC      Affirmative. And then give us a time that you were talking into it.

04 12 26 13      CMP      Okay. Will do.

04 12 26 34      CMP      Ron, I've got some results of a sextant star count we did at about 98 hours.

04 12 26 40      CC      Roger. Ready to copy.

04 12 26 43      CMP      Okay. At sunrise, first of all, the moon was in the field of view, and that tends to wipe out a lot of stars, but at sunrise, I counted 12 stars, at plus 04 two stars, plus 08 one star, and plus 12 three stars.

04 12 27 06      CC      Roger. I copy, Donn.

04 12 27 07      CMP      Then they all went away, except a couple of bright ones right after sunrise. At sunset minus 12 four, minus 8 15, minus 4 30, and at sunset, I saw 40 or more. Of course, this was at the other attitude when the moon was not in the field of view. I could see the constellation Sagittarius very plainly and all the other major stars that appeared in the telescope at that time.

04 12 27 39      CC      Roger.

04 12 27 45      CMP      I recommend that we knock off the remaining star counts on the basis that we don't need -

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really need - to put window shades up to get dark adapted because even if you are dark adapted, if you look in a telescope, you get belted with light; it ruins it anyway. And the best way to get dark adapted is to put your eyeball up there and leave it there for several minutes.

04 12 28 08 CC I see. Okay. So the window shades are not doing any good is what you're saying there. Right?

04 12 28 14 CMP I think so; yes. I don't think the window shades would help that much.

04 12 28 17 CC Okay.

04 12 28 18 CMP It's not the sunlight coming in the windows that keeps you from getting dark adapted anyway.

04 12 28 25 CC Roger.

04 12 28 29 CMP I had roughly the same sort of light pattern in the telescope that I had on the earlier test. There was a bright ring around the edge of it and a broad band across the middle of it, and this light pattern didn't disappear in the sunset.

04 12 28 47 CC All right.

04 12 28 49 CMP In fact, on that second check, come to think of it, there wasn't any band across the middle. It was pretty clean scope, and I think it had

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to do just with the respect to the earth, how close it is to the direction you're looking.

04 12 29 05 CC

I understand.

04 12 29 21 CC

Donn, - -

04 12 29 23 CMP

Yes.

04 12 29 24 CC

- - we never got the sunset - the sunset part of that first star count thing there. If it's convenient in your log, we'll take that.

04 12 29 39 CMP

Roger. I understand you did not get the data on the first one.

04 12 29 42 CC

We got the sunrise part of it, but not the sunset part of it.

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04 12 29 51 CMP

Roger. At sunset, we had thinning going on, and it wiped it out completely.

04 12 30 00 CC

Oh, I see. Okay.

04 12 30 02 CMP

There were so many fireflies, snow flakes, out there I couldn't see - tell the stars from the flakes.

04 12 30 10 CC

I understand.

04 12 31 36 CC

Thirty seconds LOS. We'll pick you up Mercury on the hour.

04 12 31 43 CMP

Okay.

MERCURY (REV 69)

04 13 00 41 CC

Apollo 7, Houston through Mercury. Standing by.

04 13 00 46 CMP

Roger. Houston, Apollo 7.

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04 13 00 49 CC

Roger. Loud and clear.

04 13 00 52 CMP Well, I put a short voice recording on the tape about - it was at 108 44.

04 13 01 01 CC Roger. Copy.

04 13 01 03 CMP That's give or take a few seconds ... I think it was about 108 33 40 actually, but that's the nearest minute.

04 13 01 12 CC Roger.

04 13 02 05 CC Apollo 7, Houston.

04 13 02 09 CMP Go ahead.

04 13 02 12 CC Roger. Donn, do you have time to give us a little run down where you found out the best place to sleep is?

04 13 02 22 CMP Yes. We're still sleeping under the couches in space, and that seems to work out best. We've tried free floating and tried keeping strapped down in the sleeping bags, and the latter seems to be better off. I think you can also sleep in the couches if you're strapped down, I guess, but if there's more than one person ... you're kind of in the way. The only problem with sleeping under the couch - at least on the right side; I haven't checked the left, but I know on the right - it tends to get hot under there for some reason; not hot, but a little warmer than the rest of the spacecraft. I don't think there's much air circulation.

04 13 03 06 CC Roger. Thank you, Donn. We copied.

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04 13 03 37 CC Apollo 7, Houston.

04 13 03 40 CMP Hey, good morning.

04 13 03 42 CC Mr. Eisele.

04 13 03 45 CMP That's right.

04 13 03 47 CC Donn, what's the word - what's the configuration of your window shades when you have both of them asleep? Do you have most of your window shades up?

04 13 03 55 CMP Negative. We haven't even pulled them out of the can the whole flight.

04 13 03 58 CC Okay.

04 13 04 00 CMP It doesn't seem to be a problem when you are asleep; you just try to bury your head under something down under the couch, and you don't even notice the sunlight much.

04 13 04 10 CC Okay. Let me ask you one other question. Sack this out: what about with respect to that telescope and stars in the daytime; can you ascertain anything at all until you're past the terminator out of the telescope?

04 13 04 30 CMP No, we started out to - you mean coming into sunset?

04 13 04 40 CC Yes, in other words, doing a P51 during daytime.

04 13 04 45 CMP Roger. If you lucked out and it happened to end up with the optics pointed at the optimum position - that is, in other words, well away

from the earth and also well away from the sun - I believe that, say 5 to 10 minutes from sunset or sunrise, you probably could see it. That's last night, at that one setting, ... in there, I could have done an alignment; but the problem of the P51 is that we don't have an alignment to start with, and you don't know how to point the thing.

04 13 05 16 CC

Yes. All right. Real fine.

04 13 05 20 CMP

... got, if you already had an alignment, you'd just rather do a fine align; you can do that okay. ... and I have seen a number of stars in the sextant during daylight.

04 13 05 37 CC

Okay.

GUAM (REV 69)

04 13 09 45 CC

Apollo 7, Houston. Opposite omni.

04 13 09 49 CMP

Roger.

04 13 12 22 CC

AOS Redstone at 32.

04 13 12 28 CMP

Roger. Roger. See you at Redstone.

04 13 12 37 CC

Roger.

REDSTONE (REV 69)

04 13 32 14 CC

Apollo 7, Houston through Redstone.

04 13 32 19 CMP

Roger, Houston.

04 13 32 22 CC

Roger. Reading you about three-by, Donn.

04 13 32 28 CMP

... got both hands full and the mike slipped. Is that better?

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04 13 32 34 CC Say again slower; I couldn't read you.  
 04 13 32 40 CMP All right. Disregard.  
 04 13 33 09 CC Apollo 7, Houston. How do you read?  
 04 13 33 13 CMP Loud and clear.  
 04 13 33 15 CC Okay. You're coming in loud and clear. While we have some quiet time, I would just like to ask you a couple more of questions, Donn. When you're in the local horizontal attitude, can you observe the horizons out the rendezvous windows below you?

04 13 33 34 CMP You mean how far below the X-axis can you see?

04 13 33 37 CC Yes.

04 13 33 40 CMP I don't know. I've never been precisely in that attitude to look. I don't believe you can, though.

04 13 33 45 CC Okay. Well look, one - -

04 13 33 46 CMP ... I'm not sure, Tom, we haven't really done any precise local horizontal maneuvers yet.

04 13 33 54 CC Okay. Well, down the line in the next day or so, if you get a chance, I wish you would do that so we can get our simulators calibrated. And, also, out the side windows - the 1 and 5 window when you're in local horizontal - if you will just make a pencil mark there, we can then get our simulators calibrated to that.

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04 13 34 12      CMP      Okay. A good time to do that may be in the land mark tracking, because we'll be lined up with local horizontal anyway.

04 13 34 20      CC      Okay. If you can, just make a note of that and check because it will sure help us on getting these - you know, quantitative data for the simulators and also to pass on to the other crews.

04 13 34 29      CMP      Okay. Will do. Incidentally, the optics of the simulator are pretty realistic. What I'm seeing through these optics in here are almost identical with respect to star visibility and so on.

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04 13 34 42      CC      Oh, okay. Particularly with the telescope, what we see in the telescope is about what you've got there in flight, Donn.

04 13 34 49      CMP      That's exactly right. You have to keep your eyeball on there for several minutes before you can begin to see any stars.

04 13 34 56      CC      I see.

04 13 34 57      CMP      ... using the telescope.

04 13 34 58      CC      Okay.

04 13 34 59      CMP      ... out the windows.

04 13 35 01      CC      Okay. That is even at nighttime too, huh?

04 13 35 04      CMP      That's right.

04 13 37 44      CMP      Houston, Apollo 7.

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04 13 37 47      CC      Apollo 7, Houston. Go.

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04 13 37 50 CMP Oh, hi, Bill. I just checked the command module RCS temperatures, and all six of them are pegged at 5 volts plus.

04 13 38 01 CC Roger. Understand. All the CM RC - CM RCS temps are pegged at 5 volts plus.

04 13 38 09 CMP That's right.

04 13 38 11 CC Okay.

04 13 39 18 CC Apollo 7, Houston. One minute LOS Redstone; Ascension on the hour.

04 13 39 25 CMP Roger.

ASCENSION (REV 70)

04 14 00 44 CC Apollo 7, Houston through Ascension.

04 14 00 49 CMP Roger, Bill. Apollo 7.

04 14 00 51 CC Roger.

04 14 02 10 CC Apollo 7, Houston.

04 14 02 15 CMP Roger, Houston. Go.

04 14 02 17 CC Roger. Could you give us an estimate on the time the CDR and IMP went to sleep?

04 14 02 29 CMP Yes. Stand by; I'm looking at the log here.

04 14 02 32 CC Say again, please? ...

04 14 02 43 CMP I think it was 109 hours, 108 hours.

04 14 02 47 CC Roger.

REDSTONE (REV 70)

04 15 06 08 CC Apollo 7, Houston through Redstone.

04 15 06 12 CMP Roger. Houston, Apollo 7.

04 15 06 21 CC It looks like we both have the night watch.

04 15 06 26 CMP Yes, it works out that way, doesn't it?

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04 15 06 56 CC Apollo 7, Houston.

04 15 07 02 CMP Roger, Houston. 7. Go.

04 15 07 05 CC Say, I have a procedure here on this television operation which I'm just gonna pass up so you don't need to write it down. It's pretty simple. It involves a technique to get the best TV picture, and it sort of goes like this. When holding the TV, during the next TV period, take a look at the position of the AL switch and report the position. That's probably before you start taking the television pictures. Then about one-half way through, during the period of television, change the position of this AL switch. The AL stands for auto light, although it isn't automatic.

04 12 07 59 CMP Okay. I got you.

04 12 08 00 CC And --

04 12 08 02 CMP Using the AL light.

04 12 08 04 CC All right. They will be coordinating with you from the ground. Also, another point, it takes the TV about 90 seconds to warm up, about a minute and a half to warm up.

04 12 08 18 CMP I see. Okay. We'll keep that in mind.

04 12 08 21 CC Right. Thank you.

04 12 08 41 CC Apollo 7, Houston. We would like to turn the O<sub>2</sub> tank 2 fans on for 5 minutes and then off. I'll remind you just about LOS.

04 15 08 56 CMP Roger.

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04 15 09 17 CC Apollo 7, Houston. I may have passed that up incorrectly. If I said OFF, it should be ON. Turn them on for 5 minutes and then off.

04 15 09 25 CMP Roger. I got you; keep going now.

04 15 11 47 CC Apollo 7, Houston. Say, Donn, we're not getting anything on the BIOMED. Have you changed anything?

04 15 11 57 CMP Roger. I'll have it on in a couple of minutes.

04 15 12 00 CC Okay. Thank you.

04 15 12 46 CC Apollo 7, Houston. Opposite omni, please. Also, I have a little bit more information on that television. That AL stands for automatic light control. It's similar to automatic gain control in an electric circuit, apparently, and it prevents a bright light source from sort of washing out the picture.

04 15 13 25 CMP Roger. Go and understand.

04 15 13 27 CC Thank you.

04 15 14 06 CC Apollo 7, Houston. Coming up on LOS; Canaries at 36.

04 15 14 14 CMP Roger. Read you.

04 15 14 19 CC And you can turn the number 2 CRYO fan back off.

04 15 14 25 CMP Roger.

CANARY (REV 71)

04 15 36 15 CC Apollo 7, Houston.

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04 15 36 19 CMP Houston, Apollo 7.

04 15 36 21 CC Roger. Through Canary I have a request. I would like a reading on pyro batt A, B, and batt C.

04 15 36 34 CMP Roger. Batt C is 36.0 volts.

04 15 36 44 CC 36.0.

04 15 36 47 CMP Stand by for the pyros.

04 15 36 48 CC Roger.

04 15 37 20 CMP Bill, I'm reading 37.0 volts for both pyros.

04 15 37 24 CC Roger. 37.0. In what position are you leaving the DC indicator?

04 15 37 33 CMP Oh, it varies. I usually leave it on one of the main bus voltages.

04 15 37 37 CC Good. That is what we'd like, main A or main B.

04 15 37 41 CMP Roger.

04 15 37 42 CC Thank you.

04 15 38 02 CMP Hey, Bill.

04 15 38 04 CC Roger.

04 15 38 06 CMP Ask the tower if they've got a recommended flap setting, too.

04 15 38 11 CC Okay, will, and you might check the friction in the throttle there.

04 15 38 16 CMP Roger. (Laughter)

04 15 38 26 CC When I shake the stick mobile, you've got it.

04 15 38 35 CMP It says use plenty.

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04 15 40 43 CC Apollo 7, Houston. Opposite omni.

04 15 40 48 CMP Roger.

04 15 40 50 CC Thank you.

04 15 42 18 CC Apollo 7, Houston. One minute LOS Canary;  
Honeysuckle at 23.

04 15 42 27 CMP Roger. Honeysuckle at 23.

04 15 42 30 CC Roger.

04 15 42 31 CMP Do you want S-band up for that?

04 15 42 34 CC (Laughter) Roger. S-band up for that one.

04 15 42 39 CMP Okay.

HONEYSUCKLE (REV 71)

04 16 23 23 CC Apollo 7, Houston through Honeysuckle.

04 16 23 32 CC Bill.

04 16 23 42 CC Okay.

REDSTONE (REV 71)

04 16 39 56 CC Apollo 7, Houston through Redstone. I have a  
flight plan update when you're ready to copy.

04 16 40 08 CMP Roger. Houston, go ahead with your flight  
plan update. Also would like to enter map  
update when you get through with this one.

04 16 40 18 CC Roger. I'll give you a map update as soon as  
I get through with the flight plan.

04 16 40 29 CMP Bill, would you log me 40 clicks with the  
water pistol and two aspirins, please?

04 16 40 39 CC How many clicks?

04 16 40 39 CMP 40.

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04 16 40 41 CC Roger. Forty clicks on the water and two aspirins.

04 16 40 46 CMP In 4 hours.

04 16 40 53 CC The flight plan update will start at 115 plus 10. CMC power up.

04 16 41 14 CMP Roger.

04 16 41 16 CC Okay. You can delete the reference to CMC power up at 117 plus 20.

04 16 42 00 CMP ...

04 16 42 03 CC Roger. At 118 plus 00, add fuel cell O<sub>2</sub> purge, also unstow and set up TV. That's at 118 plus 00 hours.

04 16 42 29 CMP Roger.

04 16 42 33 CC Next item is at 119 plus 04. TV ON.

04 16 42 54 CMP Roger. TV ON at 119 04. Do you want us to turn it on 90 seconds before that, and let it warm up, or is that the turnon time you want?

04 16 43 03 CC Roger. That'll take care of it. The Texas AOS is 119 plus 06, Texas acquisition at 119 plus 06, and sorry to interrupt, but we need opposite omni.

04 16 43 17 CMP Roger.

04 16 43 42 CC And, Donn, you can let me know when you're ready to resume copy of flight plan update.

04 16 43 48 CMP Roger. I'm all ready.

04 16 43 50 CC Okay. At 119 plus 30, SCS attitude reference check previously scheduled at 89 hours and

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50 minutes, 89 plus 50. That's just for information. And we'd like that SCS attitude reference check starting at 119 plus 30 at 30-minute intervals up to the time of the burn.

04 16 44 33      CMP      Roger. You want that at 30-minute intervals to burn time.

04 16 44 37      CC      So if you want to, make a tick at 120 plus 00 and 120 plus 30.

04 16 45 08      CMP      Okay.

04 16 45 09      CC      Okay. The notation is 121 hours in reference to SPS burn 4; the time is 120 plus 43.

04 16 45 28      CMP      Roger. Understand that you're going to burn at 120 plus 43.

04 16 45 32      CC      Roger. And over there in the box where it says two-jet ullage, you can write in quads Bravo and Delta, quads B and D.

04 16 45 46      CMP      Roger. We got you on that.

04 16 45 48      CC      Roger. And you can delete the line in reference to initiate battery charging.

04 16 45 58      CMP      Okay. Got that.

04 16 46 00      CC      Delete the half box in reference to the star count test there, the telescope star count test, sun line of sight, et cetera.

04 16 46 13      CMP      Roger.

04 16 46 15      CC      Under the line where it says MCC update, add "For landmark tracking." You will receive an update for landmark tracking at that time.

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04 16 46 36 CMP Understand landmark tracking update.

04 16 46 39 CC Roger. And at 121 plus 20, P52 option 3.

04 16 46 51 CMP Roger.

04 16 46 55 CC At 121 plus 40, state vector voice update.

04 16 47 08 CMP You say state vector voice update?

04 16 47 10 CC Affirmative.

04 16 47 12 CMP What's that for?

04 16 47 14 CC Stand by. That's for the landmark tracking,  
in case you need it.

04 16 47 23 CMP Can't you uplink it?

04 16 47 26 CC If required. That's in case you need it for  
the landmark tracking, it's not -- Roger.  
In case anything happens during the landmark  
tracking, you'll have a state vector to fall  
back on.

04 16 47 47 CMP Oh, I get you.

04 16 47 50 CC Okay. You can delete the reference to the  
star count test 3 at 122 hours. Apollo 7, we're  
coming up on LOS Redstone. I'll pick you up at  
Antigua for the rest of the flight plan update.

04 16 48 12 CMP Roger.

04 16 48 15 CC Antigua at 58.

04 16 48 28 CC Apollo 7, Houston. If you're still reading,  
the map update is REV 72, node 112 plus 56  
plus 50, 74.9 degrees west.

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ANTIGUA (REV 72)

04 16 59 06 CC Apollo 7, Houston through Antigua.

04 16 59 12 CMP Roger. Houston.

04 16 59 13 CC Roger. I'll go ahead with the flight plan update. Before I start, did you read the map update?

04 16 59 23 CMP I got as far as REV 72 and 112 plus 56.

04 16 59 28 CC Okay. REV 72, 112 plus 56 plus 50, nodal crossing at 74.9 west.

04 16 59 49 CMP Roger. Fifty-six plus 50 and then 74.9 west.

04 16 59 54 CC Roger. And continuing with the flight plan update at 122 hours.

04 17 00 05 CMP Roger. Go.

04 17 00 07 CC Roger. At 122 hours, delete the three references, H<sub>2</sub> heaters ON, telescope star count, and fuel cell purge. Add at 122 hours, 222 ORB NAV (except marks). At 122 plus 20, P23 update, star and gimbal angles.

04 17 01 01 CMP Roger. At 112 plus 20, you got a P - what happened at 122? What did you say about the landmarks again? I didn't get that.

04 17 01 12 CC Okay. That was not landmarks. Perhaps it is sufficient just to say at 122 hours P22 ORB NAV, and at 122 plus 20, P23 update.

04 17 01 35 CMP Does that mean you want me to do a P - orbital navigation at 122?

04 17 01 40 CC Affirmative.

04 17 01 44 CMP Now let's - okay. I don't get it. You want me to do an ORB NAV from 122 on to sometime, and also during that period, you are going to be reading updates to us?

04 17 02 03 CC Well, at 122 plus 20, there will be a P23 update star and gimbal angles.

04 17 02 13 CMP Okay. I figure that might be better off a little later after we get done with my orbital NAV.

04 17 02 20 CC Okay. Let's talk about it in just a minute. Let me go ahead and go through the rest of the updates. At 123 hours, delete the reference to COAS calibration. At 123 plus 30, add P23 star horizon sighting.

04 17 03 08 CC You can delete the reference to the attitude control tests that occur at about 123 plus 45.

04 17 03 22 CMP Roger.

04 17 03 24 CC At 124 plus 20, add G&N SCS power down, and delete the reference to P54 COAS evaluation.

04 17 03 52 CMP Roger, Bill.

04 17 03 55 CC Okay.

04 17 03 56 CMP Go ahead.

04 17 03 58 CC At 125 plus 30, delete the reference to P23.

04 17 04 07 CMP Roger.

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04 17 04 09 CC And that is the end of the update. Let me check on this other thing.

04 17 04 14 CMP Okay. How long of this pass is this ORB NAV supposed to take?

04 17 04 19 CC All right. Stand by.

04 17 04 29 CC The ORB NAV takes one daylight pass.

04 17 04 34 CMP Roger. That is just what I thought.

04 17 04 37 CC Okay. And you are thinking that the P23 update is going to catch you right in the middle there.

04 17 04 43 CMP It shouldn't be too bad. Walt can probably write it down while we're doing the rest of it.

04 17 04 48 CC Okay.

04 17 04 50 CMP How come you moved the P23 up 2-hours? Is that to get done so we can get to bed?

04 17 04 57 CC Affirmative.

04 17 04 59 CMP I see.

04 17 05 01 CC We're coming up on LOS. And one other quick item - we just want to - at the point - at the risk of belaboring a point, Donn and Wally's - correction, Wally and Walt's sleep period lasts until 116 plus 00 hours.

04 17 05 18 CMP Roger. I got that.

04 17 05 20 CC Okay. We will have Canaries at 09.

04 17 05 28 CMP Okay. I'll see you then.

04 17 05 31 CC Thank you.

CANARY (REV 72)

04 17 09 52 CC Apollo 7, Houston through Canary.  
 04 17 09 59 CMP Roger, Bill.  
 04 17 16 03 CC Apollo 7, Houston. Coming up 1 minute LOS  
 Canary; Carnarvon at 46.  
 04 17 16 10 CMP Roger.

CARNARVON (REV 72)

04 17 46 40 CC Apollo 7, Houston through Carnarvon.  
 04 17 46 46 CMP Roger. Houston, Apollo 7.  
 04 17 50 15 CC Apollo 7, Houston. One minute LOS Carnarvon.  
 S-band volume up at 53 for Honeysuckle.  
 04 17 50 23 CMP Roger.

HONEYSUCKLE (REV 72)

04 17 53 51 CC Apollo 7, Houston through Honeysuckle.  
 04 17 55 08 CC Apollo 7, Houston through Honeysuckle.  
 04 17 55 14 CMP Roger. Apollo 7. Read you.  
 04 17 55 16 CC Roger.  
 04 17 55 25 CMP Bill, would you log me another 24 clicks of  
 water, please?  
 04 17 55 30 CC Roger. Twenty-four clicks. Thank you.  
 04 17 58 17 CC Hey, Donn, how you feeling?  
 04 17 58 21 CMP Say again, Bill.  
 04 17 58 23 CC How you feeling today?  
 04 17 58 26 CMP Oh, pretty fair.  
 04 17 58 27 CC Good.

04 17 58 28      CMP      I've got kind of a head cold, but other than that, everything's fine.

04 17 58 32      CC      Roger.

04 17 58 38      CMP      Just sitting here doing my daily dozen.

04 17 58 41      CC      Oh, good.

04 17 58 48      CMP      That's my only chance. Those other guys get up, and they monopolize it.

04 17 58 52      CC      Yes, I saw them on television this morning.

04 17 58 59      CMP      Say again.

04 17 59 00      CC      I saw them using the exerciser on television this morning.

04 17 59 05      CMP      Oh, is that right?

04 17 59 07      CC      Roger. Rubber-necking just like everyone else.

04 17 59 11      CMP      Right.

04 17 59 35      CC      Apollo 7, Houston. One minute LOS; Carnarvon at 14 - Redstone at 14.

04 17 59 43      CMP      Roger. Thought maybe we were turning around and going the other way for a minute.

04 17 59 46      CC      That's a pretty good trick if you can pull it off. Might wake the other fellows, though.

04 17 59 54      CMP      Right.

   REDSTONE (REV 72)

04 18 14 28      CC      Apollo 7, Houston through Redstone.

04 18 17 41      CMP      Houston, Apollo 7.

04 18 17 44      CC      Apollo 7, Houston. Go.

04 18 17 47      CMP      Roger. I was just looking over this flight plan for the 8-hour active period. Looks like we're pretty well booked up. I guess the point I wanted to make is that the burn is to be the event of the day, and I take it that if we get behind or have any problems, we'll probably drop some of these other things if we need to?

04 18 18 09      CC      Roger.

04 18 20 19      CC      Apollo 7, Houston. One minute LOS Redstone; Bahama at 31.

04 18 20 26      CMP      Roger.

ANTIGUA through BERMUDA (REV 73)

04 18 33 17      CC      Apollo 7, Houston through Antigua.

04 18 33 22      CMP      Roger, Houston. Apollo 7.

04 18 33 25      CC      Roger. Donn, I'd like a readout on batt C - Charlie - voltage.

04 18 33 32      CMP      Roger. That's 36 volts.

04 18 33 38      CC      Thirty-six. Thank you. Also, Donn, I've been taking a look at the flight plan. And it may look a bit crowded, but we think everything could be gotten in there in the normal course of events in getting ready for the burn. However, we have looked at a couple of things here that could be deleted without affecting anything. First off, if you start getting crowded,

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you can scrub the photography entries, which sort of goes without saying. Second, you can scrub the SCS attitude reference checks. And third, delete the P22 exercises associated with P52.

04 18 34 29      CMP      Roger.

04 18 34 30      CC      You know, if you get in a bind.

04 18 34 41      CMP      Yes, I think we can get through it okay, Bill.  
I just wanted to point out that if we do get behind and if we do have any problems, we will probably drop them.

04 18 34 49      CC      Roger. The point is well taken.

04 18 38 38      CC      Apollo 7, Houston. One minute LOS Antigua;  
Canary 43.

04 18 38 48      CMP      Roger.  
CANARY (REV 73)

04 18 43 44      CC      Apollo 7, Houston through Canary.

04 18 43 50      CMP      Roger.

04 18 44 20      CMP      Houston, Apollo 7.

04 18 44 22      CC      Go.

04 18 44 25      CMP      Say, Bill, instead of powering up at 115 10 and doing a P23 trunnion check, I think I'd just as soon wait and do that at the time we do the start of horizon landmark business - start of horizon navigation.

04 18 44 42      CC      Roger.

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04 18 44 44      CMP      In other words, I don't see any point in powering and maneuvering around to do one little check, - -

04 18 44 48      CC      Right.

04 18 44 49      CMP      - - when it would be easier to do the same thing a little later - catch them all at the same time, probably.

04 18 46 32      CC      Apollo 7, Houston. Regarding the power up at the latter time: just before the new state vector is agreeable here.

04 18 46 44      CMP      Okay.

04 18 46 46      CC      And we'll change our flight plan accordingly.

04 18 46 48      CMP      Right.

04 18 49 54      CC      Apollo 7, Houston. One minute LOS Canary. We'll have another minute at Madrid if you turn the S-band volume up if you need to call us.

04 18 50 05      CMP      Okay.

04 18 50 15      CC      And Carnarvon at 18.

04 18 50 23      CMP      Roger.  
CARNARVON (REV 73)

04 19 18 40      CC      Apollo 7, Houston through Carnarvon.

04 19 18 46      CMP      Roger.

04 19 22 37      CMP      Houston, Apollo 7.

04 19 22 40      CC      Apollo 7, Houston. Go.



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TEXAS through ANTIGUA (REV 73)

04 20 01 35 CC Apollo 7, Houston through Texas.  
04 20 01 38 CMP Roger.  
04 20 01 40 CC Roger. I have a block data update when you're ready to copy.  
04 20 01 45 CMP Stand by, Bill.  
04 20 02 15 CMP Go ahead with the update, Bill.  
04 20 02 17 CC Roger. Block data: 075 dash 1 Alfa plus 311 minus 0650 117 24 04 3443, 076 dash 1 Alfa plus 302 minus 0650 119 00 11 3592.  
04 20 03 17 CMP Roger.  
04 20 03 18 CC 077 dash 1 Alfa plus 238 minus 0630 120 33 36 2888, 078 dash 4 Alfa plus 310 minus 1600 123 17 25 3410, 079 dash 4 Alfa plus 307 minus 1600 124 53 43 3520, 080 dash 4 Alfa plus 263 minus 1611 126 27 32 3137. Read back.

TEXAS through ANTIGUA (REV 74)

04 20 05 17 CMP Roger.  
04 20 05 38 CMP 075 dash 1 Alfa plus 311 minus 0650 177 24 04 3443, 076 dash 1 Alfa - I'll have to get the lat and long again from you - The time was 11900 11 3592, 077 1 Alfa plus 238 minus 0630 120 33 36 2888, 78 dash 4 Alfa plus 310 minus 1600 123 17 25 3410, 079 dash 4 Alfa plus 307 minus 1600 124 53 43 3520, 080 dash 4 Alfa plus 263 minus 1611 126 27 32 3137.

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04 20 06 45 CC Roger. On the first block, the time was 117 plus 24 plus 04.

04 20 06 56 CMP Roger. I got that.

04 20 06 57 CC Roger. And on the next block, the lat and long are plus 302 minus 0650.

04 20 07 13 LMP Okay. Plus 302 minus 0650.

04 20 07 17 CC Roger. And the fourth block: 078 minus 4 Alfa; the long is minus 1600.

04 20 07 27 LMP Roger. Minus 1600.

04 20 07 30 CC Roger. Readback is correct.

04 20 07 32 LMP Okay. Thanks.

04 20 07 45 CC Go.

04 20 08 13 CC Apollo 7, Houston. You're GO for 92 dash 1.

04 20 08 18 LMP Roger. You're GO for 92-1.

04 20 11 09 LMP Houston, Apollo 7.

04 20 11 16 CC Apollo 7, Houston. Go.

04 20 11 19 LMP Roger. Would you log me one Lomatil, please?

04 20 11 23 CC Would you say again, please?

04 20 11 27 LMP Roger. About half hour ago, I took one Lomatil ...

04 20 11 34 CC Apollo 7, Houston. I'm having difficulty reading you.

04 20 11 38 LMP Roger. Understand.

04 20 11 41 CC Now you're very clear. Would you say again, please?

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04 20 11 44 IMP Roger. About 30 minutes ago, I took one Lomatil.  
Would you please log that?

04 20 11 50 CC Roger. Thank you.  
CANARY (REV 74)

04 20 17 52 CC Apollo 7, Houston through Canary.

04 20 23 28 CC Apollo 7, Houston. One minute LOS Canary;  
Carnarvon at 52.

04 20 23 36 SC Roger.  
CARNARVON (REV 74)

04 20 53 06 CC Apollo 7, Houston through Carnarvon.

04 20 53 25 CC Apollo 7, Houston through Carnarvon.

04 20 53 33 CMP Go ahead, Houston.

04 20 53 35 CC Good morning, Donn. How are you this morning?

04 20 53 38 CMP Oh, just fine, Jack. Just had a fight with  
this computer here.

04 20 53 42 CC Roger. Donn, would like to get a battery C  
voltage readout here at Carnarvon.

04 20 53 52 IMP Roger. Battery C is showing 36.5, and good  
morning, Jack.

04 20 53 57 CC Good morning, Walt, and how are you?

04 20 54 01 IMP Fine.

04 20 54 02 CC And we're going to be sending you a state vec-  
tor and target load over Texas, and I'll have  
the maneuver PAD and NAV check to pass up to you.

04 20 54 14 IMP Roger. At the same time?

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○ 04 20 54 16 CC Roger. And one other thing I wanted to discuss with you here at this time is the TV went over so well yesterday, we'd like to know if you could save one of your breakfast packages to demonstrate eating on television this morning?

04 20 54 43 IMP We'll give them something interesting, but we'll probably be mostly through breakfast by then. If we have any food left, we will eat it for the audience.

04 20 54 52 CC Okay. Would appreciate it if you could do it.

04 20 54 56 IMP We're going to eat - we're starting our breakfast now, Jack, and we're not going to want to schedule things around that TV camera.

⊖ 04 20 55 03 CC Okay. Understand.

04 20 56 38 IMP What's the news this morning, Jack?

04 20 56 42 CC I'm getting it summarized now. Will be passing it up to you in a little bit. We'll pick up Honeysuckle here, Walt, at 117 00. You want to turn up your S-band?

04 20 56 55 IMP 117 00. We'll turn up the S-band.

04 20 56 57 CC Roger.

04 20 58 02 CC Apollo 7, Houston. Looks like your primary evaporator is drying out again.

04 20 58 09 IMP You know, that thing runs fine all night long until you guys come on.

○ 04 20 58 15 CC Maybe it's me.

04 20 58 19 IMP That started down during this pass, didn't it?

04 20 58 42 CDR Jack, about that: Walt's just came on, too.

04 20 58 45 CC Good morning, Wally. Could we get you to set down the primary evaporator to go to DECREASE on the back pressure switch? And do not re-service it at this time.

04 20 58 59 CMP You want another increase, don't you? I'm shutting it down now.

04 20 59 02 CC Excuse me. INCREASE on the back pressure switch.

04 20 59 06 CMP That's in work. Whenever it dried out, I go ahead and close it up. You don't want it reserved now?

04 20 59 12 CC That is affirmative.

04 20 59 23 CC What we would like to do is have the reservice take place 117 plus 15.

04 20 59 36 CMP Roger. Is that to be over a station, or do you just want me to write it down?

04 20 59 41 CC You can do it on your own.

04 20 59 44 CMP Okay. I'll give it 2 minutes of water at 117 15.

GUAYMAS through BERMUDA (REV 74)

04 21 30 42 CC Apollo 7, Houston through Guaymas.

04 21 30 45 IMP Roger. Ready to copy that data.

04 21 30 52 CC Okay. The maneuver PAD: SPS4, minimum impulse 12043 all balls plus 00129 minus all balls minus all balls 1563 plus 0901 000 78 29705 minus 085 minus 055 burn time 000 42 1161 321

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120 00 0000 minus 3103 plus 09634 1417; roll, pitch, and yaw are all balls. Remarks: heads-up, SES posigrade, the sextant star not visible after 120 plus 20 plus 00.

04 21 32 53 IMP Roger. Jack, nice speed on that. Readback as follows: SPS4 12043 0000 00129 minus 5 balls minus five balls 1563 plus 0901 00078 29705 minus 085 minus 055 000 42 1161 321 120 two balls four balls minus 3103 plus 09634 1417; all balls on the attitude, heads-up, SES posigrade, the sextant star before 120 plus 20. Over.

04 21 33 38 CC That is affirmative. I have the morning news for you.

04 21 33 45 IMP Go ahead.

04 21 33 48 IMP Go ahead. We're all on.

04 21 33 51 CC Apollo 7, before that, could we get you to go to ACCEPT, so we'll send up your target load and state vector?

04 21 34 01 IMP Roger. We're drinking our morning coffee.

04 21 34 04 CC Roger. The Supreme Court acts of yesterday now assure that all 50 states will have three candidates to pick from for the November election. The headlines this morning says, "Apollo 7 Sails On." And there is a picture of Harriet Eisele watching the TV pass from the viewing

room here at MCC. And at the Olympics, Al Herter became the first athlete in history to win a fourth gold medal. He has won the discus event in every Olympics since 1966, and that's about it from your friendly newscaster.

04 21 34 52 CMP Thank you, Jack. I appreciate that. Thanks, Jack.

04 21 34 55 CC Roger.

04 21 34 58 IMP It seems like Mr. Herter is a very durable athlete.

04 21 35 00 CC He sure is.

GUAYMAS through BERMUDA (REV 75)

04 21 38 00 CC Apollo 7. Houston.

04 21 38 01 CDR Go ahead, Jack.

04 21 38 02 CC Roger. Guaymas had a visual sighting of you as you passed over.

04 21 38 08 IMP Very good. We have a picture - a couple of visuals of them.

04 21 38 12 CC Roger.

04 21 40 09 CC Apollo 7, Houston. We have finished our update. The computer is yours.

04 21 40 15 IMP Thank you, Jack.

04 21 41 02 IMP We'll buy it.

04 21 47 02 CC Apollo 7, Houston. Thirty seconds LOS Bermuda; Canaries at 117 plus 51.

04 21 47 09 CDR Roger. See you then.

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CANARY (REV 75)

04 21 52 36 CC Apollo 7, Houston through the Canaries.  
Standing by.

04 21 52 40 IMP Roger, Jack. How come we don't have our tape  
running?

04 21 52 45 CC Stand by.

04 21 52 49 CDR Jack, while you are there, observe our pitch  
rate at this time.

04 21 52 54 CC Okay. Stand by. I don't have that display  
called up, Wally. Just a minute.

04 21 53 00 CDR This is one of those free pitch rates again.

04 21 53 03 CC Ah so.

04 21 53 06 CDR We are pretty well convinced that this machine  
does not want to fly X-axis vertical, either  
down or up.

04 21 53 13 CC Copy that.

04 21 53 15 CDR And that's how we get these gimbal locks in  
once in a while without even suspecting it - or  
a lot of rapid change of attitude. I think you  
can see my pitch rate will start decreasing;  
it's in four-tenths of a degree per second, and  
I have no pitch in.

04 21 53 32 CC Okay. I'm watching it now.

04 21 53 38 CDR All my channels are OFF. Now should I go to -  
you want GDC on number 1 ball; is that what it  
is?

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04 21 53 43 CC Affirmative.

04 21 53 47 CDR I'll have to align it.

04 21 54 06 CDR We'll give you 1620; you can watch that.

04 21 54 10 CC Okay.

04 21 54 38 CDR The computer's busy thinking the thing over.

04 21 54 48 CDR Had a pitch rate decreasing there; don't know if you can see that.

04 21 54 50 CC Roger. I can see that.

04 21 54 54 CDR I didn't do a thing to it. It's not transferring, not to another; that's another point.

04 21 55 02 CC Okay. Copy that.

04 21 55 06 CDR I could have blown a lot of fuel trying to do that.

○

04 21 55 10 CC Roger. Copy.

04 21 55 11 CDR But it wasn't worthwhile that we explore this one on this mission. I'm getting pitch towards zero for nothing.

04 21 55 35 CC Wally, your X-axis now pointed heads down toward the earth?

04 21 55 43 CDR Generally towards the earth; that's right. We are - the S-IV - the big engine is sort of ahead of us, and our - the plus X is sort of trailing. You got the angles now. Now you notice the rates are almost stopped, and I haven't done anything to the spacecraft.

○

04 21 56 09 CC Okay.

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04 21 56 12 IMP Can you give us a chart update when you get a chance, Jack?

04 21 56 14 CC In work.

04 21 56 34 CC Roger. Walt, I have the chart update.

04 21 56 40 IMP Go ahead.

04 21 56 41 CC Okay. For REV 74, the time of the node 117 plus 23 plus 02, longitude 143.1 degrees west, right ascension of 04 plus 34.

04 21 57 06 CDR Jack, now notice this, zero yaw rate, zero pitch rate.

04 21 57 14 IMP I got 117 plus 23 plus 02, 143.1 west, and 04 plus 33 right ascension.

04 21 57 23 CC Roger.

04 21 57 38 IMP Hey, Jack. Frame 86, magazine S: ground formation over the western end of Africa.

04 21 57 56 IMP You read, Jack?

04 21 57 57 CC Roger. Walt, we are about 15 second LOS  
Canaries; Tananarive at 118 plus 11.

04 21 58 04 IMP -- magazine S. frame 86 --  
TANANARIVE (REV 75) T

04 22 11 21 CC Apollo 7, Houston through Tananarive.

04 22 11 33 CDR Houston, Apollo 7. We read you.

04 22 11 36 CC Roger. Wally, we have been doing some looking into this torque business; there have been some calculations made that show that there is a

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five-tenths of a foot-pound torque possible going through perigee when you're broadside - going through perigee broadside to the direction of flight. This produces a possible rate of .03 degrees per second per second in pitch due to drag. I would like to ask you if this torquing rate that you experienced exists throughout a complete revolution, or is more pronounced - noticeable - at perigee only?

04 22 12 26 CDR We have already discovered it's more pronounced at perigee; we were thinking here last night going across the States and across the Atlantic, and we could see it more strongly ... pitch up; it didn't matter what the roll was. As we came across perigee, we started torquing right back, and we tended to go in RCS most of the time.

04 22 12 50 CC Okay. Copy. And we do have some more information on your secondary switchover.

04 22 13 01 IMP Go.

04 22 13 02 CC Okay. Our best data for your onboard gage readings for secondary tanks switchovers are as follows. Are you ready to copy?

04 22 13 14 IMP Go.

04 22 13 16 CC Okay. Quad A 46 percent; Quad B switch with tank quad D Dog; quad C Charlie 54 percent; quad D Dog 49 percent; and, at present, quad C

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is the closest to switchover, the predicted switchover time should be approximately 140 hours GET.

04 22 13 52 IMP Roger. And our meter readings are 46; Baker goes with Dog, 54 and 49 percent; we should switch over quads when they are indicating that to us? Over.

04 22 14 08 CC That's affirmative, 7.

04 22 14 12 IMP Thank you.

04 22 14 28 IMP Hey, Jack, has that correlation between our onboard readings and the actual quantities been fairly consistent ... ?

04 22 14 44 CC That's affirmative, Walt. We think the numbers we have passed you are pretty good numbers right now.

04 22 14 53 IMP Thank you.

04 22 15 04 IMP O<sub>2</sub> purge will be complete in 30 seconds.

04 22 17 34 CC Apollo 7, Houston. About 20 seconds LOS Tananarive; Carnarvon at 118 plus 26.  
CARNARVON (REV 75)

04 22 26 35 CC Apollo 7, Houston through Carnarvon.

04 22 26 39 CDR Roger. Loud and clear.

04 22 26 41 CC Roger. Standing by.

04 22 33 14 CC Apollo 7, Houston. One minute LOS Carnarvon.  
Would you turn up S-band for contact with Honeysuckle?

04 22 33 24 CDR Roger.  
HONEYSUCKLE (REV 75)

04 22 36 00 IMP Houston, Apollo 7. Over.  
04 22 36 02 CC Go ahead.  
04 22 36 04 IMP Roger. I've got four balls 5 for triangle difference on Rigel - I've got five balls, excuse me, on Rigel and Sirius, and you're reading the torquing angles now.

04 22 36 15 CC Affirmative. We followed you all the way through 52 there, Donn.

04 22 36 19 IMP This is not the regular navigator.  
04 22 36 23 CC Okay.  
04 22 36 30 IMP This is the alternative navigator.  
04 22 36 33 CC Roger. Copy.

HAWAII through BERMUDA (REV 75)

04 22 56 24 CC Apollo 7, Houston through Hawaii. Standing by.  
04 22 56 27 CDR Roger. ...  
04 23 04 59 CMP Houston, Apollo 7.  
04 23 05 01 CC Go ahead, 7.  
04 23 05 04 CMP Roger. Are you receiving our program?  
04 23 05 07 CC It's not coming through yet, Donn.  
04 23 05 11 CMP Roger.  
04 23 06 27 CMP Are you picking up anything, Jack?  
04 23 06 29 CC Not yet, Donn. We're just about to get our handover to Texas. We should be picking up shortly.

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04 23 06 34      CMP      I see. Okay. We're not there yet.

04 23 06 42      CMP      Wally's complaining. He says he's got a sinus  
that's getting heavy.

04 23 06 50      CC      Copy that.

04 23 07 46      CC      Still nothing yet, Donn.

04 23 08 02      CC      Apollo 7. Opposite omni.

04 23 08 07      CMP      Roger.

04 23 08 45      CC      Apollo 7, Houston. Could you switch to the  
omni antenna in between?

04 23 08 51      CMP      Roger.

04 23 08 58      CC      There it is; there it is.

04 23 09 00      CDR      Okay.

04 23 09 03      CDR      Jack, are you receiving the picture now?

04 23 09 05      CC      We're receiving the picture; it's a little  
bright. Could you bring it in a little? Roger.  
From the lovely Apollo Room high atop every-  
thing.

04 23 09 19      CDR      Roger. This is your captain speaking on this  
flight, and you can unfasten your seat belts  
and relax, and we hope we can make this flight  
enjoyable for you. At this time, we would like  
to demonstrate one of our minor problems here;  
in fact, I should tell you what time it is.  
Just one moment, and we'll get a computer on  
the line here.

04 23 09 43      IMP      It's in ENTER now.

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O

04 23 09 46 CDR

Okay. We'll reset that.

04 23 09 51 CC

He's getting GET up.

04 23 09 56 CDR

And we now have our time counting. It is 119 hours 9 minutes and some odd seconds into the flight. One of our problems at this time is making note of the small arrow here; we're not sure what it means in that up is not necessarily up or down, but we will discuss that at a later time. What you just observed was a fumbling attempt to get the keyboard working on our DSKY, which is our display keyboard; and the numbers you are reading is the time generated from the onboard computer. I'd now like to show you Walt Cunningham preparing some our food at our food station. I'll bring you in close to show you what our food stations have. We have two buttons: the upper button is COLD, the lower is HOT; and there is a spout that Wally is now uncovering. When we depress the button, with the appropriate container over the silver spout, we deliver 1 ounce of water, be it hot or cold. At this time, Walt will get some of the food. One of the nice features of the food preparation on this flight is - a nice feature about the food is that we have hot water, and this makes the food much more

enjoyable and quite palatable. We are using a pair of surgical shears to cut open the upper portion of the plastic bag, and we pry open the spout, which will then interface with the tap. At this point, Walt is applying it to the tap. On this trip, we use cold water. We are re-constituting some fruit juice. You see him depress the button, and each depression supplies 1 ounce of cold water. This water is quite delightful. It's cold as hell; it's about 50 to 45 degrees Fahrenheit. At first, we were adding chlorine to the water daily to be sure there were no contaminants or bacteria that would develop in the water. This left a rather bad aftertaste. We are now adding chlorine approximately every other day.

HAWAII through ANTIGUA (REV 76)

04 23 12 28

CDR

He is now adding 5 ounces of water. You may notice the bubbles that are in the bag. There's a little bit of gas in the water; this does not cause us too much problems. If you get a lot of gas it does, and we have to clean the gas back out again. Fortunately, this has not happened too often. Then, the next step is to knead the bag; this mixes the powder concentrate with the water; and then we end up with a

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complete drink. We may have a zero-g demonstration available for you here, where we can spin the bag, and you will notice the bubbles are sort of breaking and falling apart. They do not form a solid mass of bubbles, but you can see in the center a rather interesting formation of bubbles.

04 23 13 26 CDR I'd like to pass the camera now to Dorn Eisele. I'd like to try to show you the problem we have with the water condensation underneath on the other panel. Here goes the camera to Donn.

04 23 13 45 IMP While Wally is getting under the couch to demonstrate the suction that we use to clean up the water that has been accumulating on the cold pipes, I'll describe the system that we do have. We have an overboard dump hose, which dumps the liquid we have in the spacecraft overboard through a heated vent; that hose has been passed to Donn, and he has a purge fitting attached to the end of it. I'm now going to go to the dump position on the waste management system, and Wally will be vacuuming up some water while Donn and I throw light on it.

04 23 14 37 CC Apollo 7, Houston. Could you give us the position of the switch on the TV camera?

04 23 14 42 IMP ALC is OUT.

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04 23 14 45 CC We would like to switch that position to IN, to the ALC position.

04 23 14 49 IMP Roger. Is your picture satisfactory?

04 23 14 53 CC It's a good picture; we're trying to improve it a little.

04 23 14 57 CMP Roger. We're trying to show you a picture of a plumbing fitting that has a lot of water on it, clinging to it. Can you see the water on the fitting?

04 23 15 09 IMP Can you see the water on the fitting, Jack?

04 23 15 12 CC We're looking; don't quite see it.

04 23 15 16 CMP Okay. Can you see the fitting?

04 23 15 19 CC Affirmative. Could you go back to the OUT position?

04 23 15 23 CMP It's always worked better in the OUT position. Maybe you will see it when he starts sucking it up.

04 23 15 28 IMP Okay. Now he's going to suck up the water with the vacuum line we have. It's a very, very small vacuum, but so far, it seems to have worked pretty well at taking water overboard. It's a pretty good size blob of water that's - yes - takes quite awhile. Are you observing that, Jack?

04 23 16 04 CC Affirmative. We got you five-by. We've got about another minute and a half of picture here.

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04 23 16 12 IMP

Okay. Okay. This is part of our regular preparation for a burn now, is to clean off what water we can see because after an SPS burn it seems to end up on the aft bulkhead. This water is formed by condensing on the cold glycol lines. Donn will finish out the run by showing you the MDC in front of the commander's station. Go ahead and talk, Donn.

04 23 16 56 CMP

All right. This is the commander's station. The left-seat driver controls the attitude of the spacecraft and also the operation of the main system.

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04 23 17 08 CMP

This instrument in the middle is the heart of the whole thing, really. It is called our Flight Director Attitude Indicator which is comparable to the artificial horizon in an airplane, except that it operates in all three axes instead of just two. These various switches control the configuration of the manual attitude control system. We can hold an attitude, or we can free drift. We can have two or three modes to use the handcontroller. This is the handcontroller that you use to slide the spacecraft around various attitudes manually. These switches here control the electronics and whether or not the signals get

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from the handcontroller out to the little jets to fire them.

04 23 17 54 LMP Are you still picking up the picture, Jack?

04 23 17 56 CC Negative. We just lost the picture. That was a real good demonstration of your little home there.

04 23 18 03 CMP Roger. See you tomorrow, same time, same station.

04 23 19 56 CC Apollo 7. One minute LOS Bermuda.

04 23 20 07 CC We pick you up at Tananarive at 119 plus 43.

04 23 20 14 LMP Roger.

04 23 20 16 CC And, Walt, Low was in the viewing room, saw it all, sends you regards.

04 23 20 23 LMP Oh, thank you very much, Jack.

04 23 20 25 CDR Jack, could you get a view of that water blob down there?

04 23 20 28 CC We couldn't pick up the water itself very closely, but we saw approximately what you were vacuuming.

04 23 20 37 CDR Okay. That's one of the areas; there are a number of them where they collect. There is one right inside where the steam duct is; I'm in there now. There's a real big blob of water.

04 23 20 50 CC Roger. Copy. we'll see you at Tananarive.

TANANARIVE (REV 76)

04 23 46 00 CC Apollo 7, Houston through Tananarive.

04 23 46 10 LMP Roger, Houston.

04 23 46 12 CC We're standing by.

04 23 47 35 LMP Houston, Apollo 7.

04 23 47 39 CC Go ahead, 7.

04 23 47 41 LMP Roger. What are you doing about putting the water boiler back on here?

04 23 47 42 SC (Laughter)

04 23 47 50 CC Walt, the COMM is real bad here at Tzanarive. I could hardly make you out. Could you say again?

04 23 47 57 LMP Okay. It's a question of putting the water boiler back on the line.

04 23 48 04 CC Stand by.

04 23 48 28 CC Apollo 7, Houston. You can bring the water boiler back on the line. We will take a look at it over Carnarvon at 120 plus 00.

04 23 48 37 LMP Roger. We'll put it back.

04 23 48 39 CC Roger.

ARIA 2 (REV 76)

04 23 55 50 CC ARIA 2, go REMOTE.

04 23 55 55 CT ARIA 2 has AOS. ARIA 2 has AOS.

04 23 57 13 CC Apollo 7, Houston through ARIA 2.

04 23 58 03 CC Apollo 7, Houston through ARIA 2.

04 23 58 44 CC Apollo 7, Houston through ARIA 2.

## CARNARVON (REV 76)

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05 00 00 50 CC Apollo 7, Houston through Carnarvon.

05 00 01 27 CC Apollo 7, Houston through Carnarvon. Standing by.

05 00 01 36 CDR Roger, Houston.

05 00 04 18 LMP Houston, Apollo 7.

05 00 04 19 CC Go ahead, 7.

05 00 04 22 LMP Roger. I've got the shaft at 115.33 and the trunnion at 31.707 for the sextant star check.

05 00 04 35 CC Roger. We copied that, and, Walt, we would like your O<sub>2</sub> fans tank 2 ON for 3 minutes.

05 00 05 51 CC Apollo 7, Houston. Your sextant star check is GO, and we would like to remind you to have turned the batteries OFF as soon as possible after the burn.

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05 00 06 04 LMP Wilco.

05 00 06 06 CDR Jack, we did a - skip that - require, request an SCF attitude reference check at 119 hours and 30 minutes. I did that the other day and gave you an hour and 15 minutes comparison. That data should be better than the check we've had a call for.

05 00 06 23 CC Okay. We copy that.

05 00 06 26 CDR It's not that I didn't want to do it, but we did it for free when we had a good chance to do it.

05 00 06 31 CC Okay.

05 00 06 33 CDR That data should be in.

05 00 07 51 CC Apollo 7. One minute LOS Carnarvon; Hawaii at 120 plus 25.

05 00 07 59 CDR Roger.

05 00 08 01 LMP The water boiler looks like it's ticking along okay, Jack. I think we can leave it on.

05 00 08 05 CC We concur. Looks good here.

HAWAII (REV 76)

05 00 26 15 CC Apollo 7, Houston through Hawaii.

05 00 26 18 CDR Roger. Loud and clear.

05 00 26 24 CC Wally, we saw - as you went over the hill, we saw you looking at HOUN 54. Your R1 and R2 will be zero in that HOUN because the S-IVB and CSM speed vectors that we uplinked awhile back are the same. The CSM state vector is a good state vector.

05 00 26 49 CDR Roger.

05 00 26 52 CC And we would like to have you turn O<sub>2</sub> fans tank 1 off for the burn here.

05 00 27 00 CDR Okay. That's tank 1 OFF and tank 2 OFF. Is that correct?

05 00 27 03 CC That is affirmative.

05 00 27 06 CDR Okay. I'll turn tank 1 off now.

05 00 27 52 CC Apollo 7, all your systems and everything looks real good here on the ground.

05 00 27 56 CDR Roger. We're GO.

05 00 27 59 CDR Jack, on this, we have flight plan seat assignment.

0 05 00 28 08 CC Roger. Copy that, Wally.

05 00 28 10 CDR That includes COMM connections as well.

05 00 28 14 CC Okay.

05 00 32 05 LMP Houston, Apollo 7. Over.

05 00 32 08 CC Go ahead, 7.

05 00 32 09 LMP Roger. I forgot to give you a reading. I had  
246 mm of O<sub>2</sub> partial pressure this morning.

05 00 32 15 CC Okay. Copy that.

HUNTSVILLE (REV 76)

05 00 35 25 CT Huntsville AOS.

05 00 36 27 CT Huntsville AOS.

05 00 38 31 CDR Okay. We'll go on. Start pitch one and yaw one.

05 00 38 36 CMP Pitch left. Start.

05 00 38 38 CDR ON.

05 00 38 39 CMP Yaw one. Start.

05 00 38 41 CDR ON.

05 00 38 45 CMP ... properly.

05 00 39 01 CMP ON.

05 00 39 03 CDR GPI.

05 00 39 15 CMP Did. Receive?

05 00 39 19 CDR It's verified.

05 00 39 20 CMP Pressure's neutral - 00 MPM.

05 00 39 23 CDR ...

05 00 39 36 CT Huntsville LOS.

GOLDSTONE through BERMUDA (REV 76)

05 00 39 57 CC Apollo 7, Houston. Could we have omni Able,  
please?

0 05 00 40 08 CMP I missed it.

05 00 40 09 CDR On my direct command ... attitudes, yaw three.  
Ready? Commence.

05 00 40 16 CMP ... like this.

05 00 40 41 CC Apollo 7, Houston. I'll give you a time back  
at 2 minutes.

05 00 40 55 CC Five, four, three, two, one.

05 00 41 00 CC MARK.

05 00 41 01 CC T minus 2 minutes.

05 00 41 02 CMP ... five-five.

05 00 41 04 CDR Five and five.

05 00 41 05 CDR DELTA V test A and B normal.

05 00 41 08 CMP DELTA V test A and B normal.

05 00 42 29 CDR ... DELTA-V, ON.

05 00 42 34 CMP Roger. ON.

05 00 42 35 CDR And 20 seconds ullage.

05 00 42 37 CMP Roger. Ullage for 20.

05 00 42 45 CMP Ullage.

05 00 42 50 CC Ten, nine, eight, seven, six, five, four, three,  
two, one, zero.

05 00 43 02 CDR ...

05 00 43 10 CDR Gimbals OFF, ... OFF.

05 00 43 16 CDR DELTA-V thrust ... OFF.

05 00 43 18 CMP DELTA-V ... OFF.

05 00 43 20 CDR Okay. We've got 10 seconds ...

05 00 43 23 CMP Roger.

05 00 43 24 CDR ...

05 00 43 26 CMP Okay ... residuals minus ... balls 24, and ...  
four balls 1 at first.

05 00 43 38 CDR Gimbal motors OFF and gimbal motors circuit  
breakers OPEN.

05 00 43 44 CDR ... power.

05 00 43 45 CMP Roger. Gimbal motor circuit breakers are OPEN,  
and ... power is OFF.

05 00 43 50 CDR Direct RCS OFF.

05 00 43 51 CMP Direct RCS coming OFF.

05 00 43 53 CDR Main bus ... OFF.

05 00 43 57 CMP Roger. In free drift now in the slosh mode test.

05 00 44 03 CC Roger. Copy.

## GOLDSTONE through BERMUDA (REV 77)

05 00 44 05 LMP Did you copy my DSKY? Have you got the ... on  
that?

05 00 44 08 CC Affirmative.

05 00 44 09 CDR ... mode still OPEN. Stand by ... control.

05 00 44 20 CDR ...

05 00 44 23 CMP ... controls are locked.

05 00 44 24 CDR EMS OFF.

05 00 44 25 CMP OFF. EMS counter is reading minus 7.7.

05 00 44 30 CC Roger. Copy that.

05 00 44 34 CMP That means it's been 15.3, I guess.

05 00 44 38 CC Roger.

05 00 44 53 CDR Believe it or not, we saw all four ball valves.

05 00 44 59 CC Roger. Say again, Wally?

05 00 45 02 CDR All four ball valves rolled - kind of a surprise in that short burn.

05 00 45 06 CC Okay.

05 00 46 45 CDR Houston, we just checked our file batteries, and both are 30 second volts.

05 00 46 49 CC Roger. Thank you.

05 00 47 03 LMP Jack, did you ever drive those little amusement park cars, those bumper things?

05 00 47 10 CC Say again.

05 00 47 11 CDR Those little scooter things: when you try to pass, you bump off the guard rails and crash into each other? That's the best analogy we can think of for that particular burn: like plunging head-on into somebody in one of those amusement park scooters.

05 00 47 26 CC Oh, Roger. Roger. Copy that. We got a commanded ON time down here of .51 seconds.

05 00 47 35 CDR Roger.

05 00 47 43 CC Wally, how long has it been since you have been to an amusement park and done that?

05 00 47 47 CDR I'm not going to tell.

05 00 47 49 CC Roger.

05 00 47 50 CDR ... age only a couple of days ago.

05 00 48 56 CDR Jack, we're going to re-rig our couch so we'll have one man on watch; two will be going off.

05 00 49 07 CC Wally, we couldn't copy that. Could you say again?

05 00 49 10 CDR We are going to re-rig our couch seats and our ...

05 00 49 20 CC We still couldn't get it, Wally.

05 00 49 23 CDR We are going to put the crew back into their original seat assignments.

05 00 49 26 CC Roger. Copy.

05 00 52 47 CC Apollo 7, Houston. You are 1 minute LOS Bermuda; we pick you up at Ascension at 121 plus 03.

04 00 52 57 CDR Jack, I just could get our landmark PAD update. Over.

05 00 53 02 CC Roger. We have the landmark track PAD. I'll pass it up to you at Ascension. Your orbit now 90.3 by 157.5.

05 00 53 14 CDR All right.

05 00 53 48 CMP Hello, Air Boss. Hello, Air Boss. This is Apollo 7. Do you read?

05 00 54 10 CT Roger. Read you loud and clear. How me?

05 00 54 15 CMP We're overhead and doing well.

05 00 54 29 CT Air Boss, Air Boss, Apollo 7. Over.

05 00 54 48 CT Air Boss, Air Boss. Break, break, break, Air Boss.

05 00 55 01 CMP Hello, Essex. Hello, Essex. This is Apollo 7. Do you read?

05 00 55 08 CMP Hello, Air Boss. Air Boss, Apollo 7.

05 00 55 21 CDR Hello Air Boss. Hello, Air Boss. Apollo 7. Do you read?

## ASCENSION (REV 77)

05 01 03 44 CC Apollo 7, Houston through Ascension.

05 01 03 48 LMP Roger, Jack.

05 01 03 51 CC Roger, 7. Walt, we would like to have you switch your O<sub>2</sub> tank 1 fans to AUTO.

05 01 03 59 LMP A few minutes ago, the ... temperature was all the way down to 34 degrees, and steam pressure was about .07 or .08.

05 01 04 12 CC Roger. We copy that. We would like to find out what cyclic water accumulator you are operating on now.

05 01 04 23 CMP Roger. We're on AUTO 1, and every once in a while, we hear some gurgling sounds. I shouldn't say every once in a while, but several times we have heard gurgling sounds in the outlet pipes of the umbilicals. At that time, we generally turn the water accumulator AUTO, OFF and manually cycle the water accumulator three or four times. Seems to have helped.

05 01 04 45 CC Okay. Copy that. Did you switch auto accumulators lately, Walt?

05 01 04 56 LMP Unless the last time anybody used the manual water accumulators, maybe then they turned it to OFF and went back to a different one. But I switch it regularly every day in the redundant component check.

0 05 01 05 10 CC Okay. Real fine. We copied some calls down to Air Boss. I think some of the conversations you heard from the ground were that of the recovery forces. They were conducting an exercise in the Atlantic there.

05 01 05 24 CDR Roger. Understand that. We actually got to interrupt their conversation as he switched from Apollo 1 to Apollo 7.

05 01 05 33 CC Roger. I am ready with this landmark tracking PAD whenever you are ready to copy.

05 01 05 46 CT Okay. Surgeon, what do you want? Surgeon? Wait. EECOMM, what did you make of that?

0 05 01 06 17 CMP Jack, this is Donn. Go ahead with your landmark update.

05 01 06 20 CC Okay. Landmark ID 10 south, next landmark 67 on track, third one, 141 south. GET, first landmark, 122 plus 14, 122 plus 24, 122 plus 35.

05 01 07 00 CMP Roger. Understand. First landmark is 10 south, number 2 is 67 on track, number 3 is 141 south. The times are 122 plus 14, 122 plus 124, 122 plus 35.

05 01 07 19 CC That is correct.

05 01 07 23 CMP Roger. We got you.

05 01 07 34 CC Apollo 7, would you switch your BIOMED to CMP?

05 01 07 43 CMP Will do.

0 05 01 07 44 CDR We changed around so much we lost that one.

05 01 07 46 CC Copy.

05 01 07 50 CDR You mean he has a signature now?

05 01 07 54 CC Affirmative.

05 01 08 10 CDR Hey, Jack.

05 01 08 11 CC Go ahead.

05 01 08 12 CDR How are our pulse rates doing up here these days?

05 01 08 18 CC Stand by.

05 01 08 21 CDR Okay.

05 01 09 42 CC Apollo 7, Houston. The pulse rates for CDR run 60 to 70, for CMP 75 to 90, with 118 during the burn, and LMP has been running around 80.

05 01 10 02 CDR They have gone up during the burn? Very good.

05 01 10 04 CC Okay. We are just about to lose you over Ascension; Tananarive at 121 plus 19.

05 01 10 12 CDR Roger. Jack, ask the medics to save that strip of Sanborn for Donn as the burn starts. It's a nice souvenir for him.

05 01 10 23 CC Will do, Wally.

05 01 10 25 CDR I still have that one from my ...  
TANANARIVE (REV 77)

05 01 20 55 CC Apollo 7, Houston through Tananarive.

05 01 21 01 CDR Roger.

05 01 21 07 LMP Roger. Log LMP 20 clicks of water.

05 01 21 14 CC And, 7, you might be interested that tropical storm Gladys is now officially a hurricane. Its present position is approximately over Havana.

You'll be able to see it your next rev. You'll pass almost over it.

05 01 21 35 LMP Roger. Thanks much.

05 01 22 53 LMP Houston, Apollo 7.

05 01 22 56 CC Go ahead, Apollo 7.

05 01 22 58 LMP Roger. We're scheduled for a P52 ... alignment at this time. I wonder how critical that is. We're not in the proper attitude for it, and since we have to maintain a local vertical for it ...

05 01 23 21 CC Apollo 7, could you say again? COMM through Tananarive is pretty poor.

05 01 23 28 LMP Roger. Regarding the P52 alignment at this time: I would prefer not to do that. Over.

05 01 23 39 CC Okay. Copy. Stand by.

05 01 23 50 CC Apollo 7, we concur. Negative P52.

05 01 23 55 LMP Roger. Thank you.

05 01 24 01 CC And, 7, we've got about 1 minute LOS Tananarive. We would like to try an S-band contact through ARIA 2 at approximate 121 plus 30.

05 01 24 15 LMP Okay. We'll do that.

ARIA 2 (REV 77)

05 01 30 12 CC ARIA 2, go REMOTE.

05 01 30 52 CC Apollo 7, Houston through ARIA 2.

05 01 31 32 CC Apollo 7, Houston through ARIA 2.

05 01 31 39 LMP Go ahead, Houston.

05 01 31 50 CC Roger. Five-by through ARIA 2.

05 01 31 44 CDR Very good; best ARIA we've had yet.

05 01 31 50 CC We thought this is about the best COMM we've had through ARIA, Wally.

05 01 31 54 CDR Yes, I'm really impressed with it.

05 01 32 03 CC I think maybe we ought to use S-band through all of our ARIA aircraft when we try ARIA.

05 01 32 09 LMP I like - it's better than the work we've had with Tananarive.

05 01 32 13 CC I agree.

05 01 32 21 CDR How long can we work this bird, Jack?

05 01 32 25 CC We'll pick up Carnarvon here at 121 plus 33.

05 01 32 30 CDR Roger. Do we overlap with ARIA?

05 01 32 32 CC Affirmative. They will cut us off ARIA at that time, and I have a P27 voice PAD to give you at Carnarvon.

05 01 32 45 LMP Roger. We'll stand by.

CARNARVON (REV 77)

05 01 33 01 LMP Just to fill you in, Jack: I'm doing a slow - a very slow roll during the SCS. It's about pitched to about 26 degrees, and we're not getting the torquing effect we had before.

05 01 33 22 CC Okay. Good news.

05 01 33 28 CDR We're getting some more water out of the suits and hoses, and it may be a function of the burns to bring the water up, but obviously, we're getting it.

05 01 33 39 CC Okay. Copy it.

05 01 34 34 CC Apollo 7, Houston through Carnarvon.

05 01 34 38 CDR Roger. Loud and clear ...

05 01 34 42 CC It's on the subject of water, Wally. Through the TV pass over the States, we didn't copy two - we showed that you were missing two cycles on the water accumulators there. You might have picked up some excess water due to that.

05 01 35 00 CDR I don't think so. It's a bigger deal than that. We've been cycling off and on extra. It's been cycled whether or not you know every 10 minutes; we can't watch it every 10 minutes. We've been cycling extra passes, and we've done as much as two to three per hour extra.

05 01 35 19 CC Okay. Copy that.

05 01 35 24 CDR It might be worthwhile to have somebody watch it. We are in AUTO at this time.

05 01 35 29 CC Roger. I understand, and ready on that CSM NAV vector whenever you're ready to copy.

05 01 35 42 CDR Coming up. Stand by.

05 01 35 57 LMP Go.

05 01 36 00 CC Okay. CSM NAV 71 122 plus 00 plus 00 21 01605 00001 74611 57774 13503 36773 04434 02252 52655 65527 66107 55530 11372 22031 05170 25200. The NAV check: 121 30 0000 minus 3049 plus 07891 1515.

05 01 37 56 CMP Roger. Readback follows: CSM VERB 71 122 plus  
00 plus 00 21 01605 00001 74611 57774 13503  
36773 04434 02252 52655 65527 66107 55530 11372  
22031 05170 25200. Over.

05 01 38 37 CC Roger. Copy.

05 01 38 39 CMP NAV check readback: 121 30 four balls minus  
3049 plus 07891 1515. Over.

05 01 38 50 CC You've got it correctly.

05 01 41 41 CC Apollo 7, Houston. One minute LOS Carnarvon;  
Guam at 121 plus 47.

05 01 41 48 CDR Roger. We've got some stars in sight. We may  
do a 52 after all.

05 01 41 52 CC Roger.  
GUAM (REV 77:

05 01 50 58 CC Apollo 7, Houston through Guam.

05 01 51 01 CDR Roger, Houston. Loud and clear.

05 01 51 03 CC Standing by.

05 01 51 04 LMP Thank you.

05 01 51 05 CMP Jack, would you log CMP for ten clicks on the  
water gun?

05 01 51 09 CC CMP ten clicks.

05 01 51 11 CMP Roger.

05 01 51 49 CC Apollo 7, Houston.

05 01 51 52 LMP Go ahead.

05 01 51 53 CC It appears that your SM AUX TV switch is ON; is  
that affirmative?

05 01 52 00 CMP Negative. It is OFF. Tape is ON.  
05 01 52 03 CC Roger. I understand.  
05 01 52 29 LMP Jack, this is LMP. Give me ten clicks on the water gun; and when you get a chance, can you give us a map update, please?  
05 01 52 35 CC Roger. In work.  
05 01 52 38 CC We're just about to lose you over Guam. Hawaii at 121 59; map update then.  
05 01 52 44 LMP Thank you.

## HAWAII through GRAND BAHAMA ISLAND (REV 77)

05 02 00 16 CC Apollo 7, Houston through Hawaii.  
05 02 00 19 CDR Roger. Loud and clear.  
05 02 00 21 CC Okay. I have your map update.  
05 02 00 23 CDR Go.  
05 02 00 25 CC For REV 77, the node 121 plus 49 plus 18, longitude at 148.8 degrees east, right ascension of 04 plus 28.  
05 02 00 47 LMP Roger. Jack, we haven't been using any of the right ascensions, so you can drop those unless we ask for one, if you will.  
05 02 00 53 CC Okay.  
05 02 00 55 CMP Jack, this is CMP.  
05 02 00 57 CC Go ahead.  
05 02 00 59 CMP Roger. How many of these landmarks do you have real-time coverage for?  
05 02 01 04 CC Stand by.

0 05 02 01 47 CC Apollo 7, Houston. We are covering the first two landmarks real time.

05 02 01 54 CMP Okay.

05 02 02 19 CDR Houston, Apollo 7.

05 02 02 22 CC Go ahead, 7.

05 02 02 23 CDR Roger. We've been up here trying to deliberate whether to look at the hurricane or the second landmark. I suspect the second landmark is socked in by the hurricane, is it not?

05 02 02 32 CC Negative.

05 02 02 34 CDR Okay.

05 02 10 02 CC Apollo 7, Houston.

05 02 10 06 CDR Go ahead.

05 02 10 07 CC Roger. I have this midcourse navigation PAD to pass up whenever you are ready to copy.

05 02 10 18 LMP We will do it later. Pretty well tied up with this now.

05 02 10 21 CC Okay. No problem. I'm just standing by.

05 02 10 36 LMP Go ahead, Jack. I'll copy it.

05 02 10 39 CC Okay. GET start 123 plus 52, 124 plus 04, star 37, star 45, roll 000 001, pitch 356 306, yaw 001 001, shaft 019 355, trunnion 018 014, end.

05 02 12 01 LMP Apollo 7. Do you read?

05 02 12 03 CC Apollo 7, Houston. Read you now. Did you copy the midcourse navigation PAD?

05 02 12 12 LMP 124 plus 04, stars 37 and 45, 000 001, 356 306, 001 001, 019 355, 018 014. Over.

05 02 12 32 CC Roger. I didn't get your readback of the first time. That should be 123 plus 52.

05 02 13 02 CC Apollo 7, Houston. Did you copy that?

05 02 13 06 LMP I didn't copy anything after I gave you the readback.

05 02 13 08 CC Okay. Walt, I didn't get the readback on the first time. The first GET was 123 plus 52.

05 02 13 18 LMP Concur.

05 02 13 19 CC Okay. Real fine.

05 02 13 48 LMP Jack, mark the LMP ten clicks of water.

05 02 13 52 CC Copy that.

05 02 14 57 CMP Hey, Jack, this is Donn.

05 02 14 59 CC Go ahead.

05 02 15 00 CMP That first landmark you gave me wasn't even within the field of view of the optics at zero roll angle.

05 02 15 06 CC Roger. Copy that.

05 02 16 46 CC Apollo 7, Houston.

05 02 16 56 CC Apollo 7, Houston.

05 02 17 15 CC Apollo 7, Houston.

05 02 17 18 LMP Go, Jack.

05 02 17 19 CC Okay. Donn, on this second landmark, we can give you a shaft and trunnion to help you out here. Shaft will be 008, and your trunnion will

be 031. This will occur when you're pitched down 10 degrees and in ORB RATE.

05 02 17 39      CMP      Roger. Understand. Thank you. Jack, I'm going to try to get the optics. It turns out that my field of view in the telescope is only 38 degrees anyway, so I might as well go ahead and use the optics.

05 02 17 51      CC      Okay. Real fine.

05 02 17 52      CMP      What faked me out that last time: I wasn't aware that I needed to roll the spacecraft. I was looking for it to the south, but it was so far south that it was out of view.

05 02 18 02      CC      Okay. Copy that.

05 02 18 49      CDR      Got some nice weather down there now, Jack?

05 02 18 55      CC      Weather was pretty good when I came in, Wally.

05 02 18 58      CDR      Yes, it looks good from here.

05 02 19 19      CDR      There's just a solid overcast for a hurricane.

05 02 19 23      CC      Roger.

05 02 19 24      CDR      There's a little bit of vortex way out here. I'll take one shot as we're going into it.

05 02 19 30      CC      Roger. It's moving north toward Florida.

05 02 19 44      CDR      Frame 89 - frame 88 was approaching Houston; frame 89 is approaching the hurricane just now.

05 02 19 52      CC      Roger. Copy.

05 02 19 54      CDR      On magazine Sierra.

## HAWAII through GRAND BAHAMA ISLAND (REV 78)

05 02 20 36 CMP Houston, Apollo 7.

05 02 20 38 CC Go ahead.

05 02 20 40 CMP Roger. Could you give us the shaft and trunnion for the third landmark as well?

05 02 20 44 CC Will do. Shaft 040, trunnion 031.

05 02 20 53 CMP Roger.

05 02 20 54 CDR There's some high cirrus way high in the forms of vortex sweeping from our left to our right and then coming back around to the north - which, of course, is the characteristic pattern - and some low solid stuff; you can almost see the eye in the center of it. I'm trying to get a picture of that now.

05 02 21 11 CC Roger.

05 02 21 15 CDR It's definitely a circular pattern here. We'll be going over the eye in about another - oh, I'd say, 4 or 5 seconds.

05 02 21 23 CC Copy.

05 02 21 24 CDR I'll try to give you a pretty good eye location. Stand by.

05 02 21 31 CDR Mark.

05 02 21 32 CDR That's the eye.

05 02 21 38 CDR That's a real tight report on your hurricane.

05 02 21 41 CC Roger, Wally.

05 02 22 11 CDR Good weather from here.

05 02 23 48 CC Apollo 7, Houston.

05 02 23 50 CDR Go ahead, Jack.

05 02 23 52 CC Roger. We got the - at the time you read out the mark, we got a latitude and longitude, and we have passed it on to the Hurricane Center.

05 02 24 01 CDR Roger. That's a new first on mark of hurricanes.

05 02 24 04 CC Roger.

05 02 24 07 CDR Fair weather.

05 02 24 22 CDR Jack, tell the Center to send it away from that boat basin.

05 02 24 26 CC Roger. Will do, Wally.

05 02 24 29 CDR Tell them to get it out of the way next Tuesday.

05 02 24 33 CC We'll do that, too.

05 02 24 36 CDR Roger.

ASCENSION (REV 78)

05 02 39 12 CC Apollo 7, Houston through Ascension.

05 02 39 16 CDR Roger.

05 02 39 17 CC Roger. It appears that the evaporator is dried out again.

05 02 40 30 CDR Houston, Apollo 7.

05 02 40 32 CC Go ahead.

05 02 40 34 CDR Are we going to have a tape when we lose you here?

05 02 40 38 CC That's affirmative, Wally. How did the last two landmark tracking points come out?

05 02 40 45 CMP Terrible.

O

05 02 40 47

CC

Roger. Copy.

05 02 40 51

LMP

Roger. On the second one, I relied on all optics to bring it in when it got within 38 degrees, and the thing never moved off center; so at that point, I attempted to go for it manually, and by the time I got over to it - I recognized it, and it was going so fast that high speed resolve wouldn't catch it. It got away from me. I finally picked it up just as it went outside the field of view, but it was too late to get any marks. On the third one, I loaded in the date of the landmarks up here, and when I went down on optics, it indicated that the target was completely outside the field of view to the north ... I saw the thing a little bit to the south of us. ... so what it amounts to is I got faked out three times on this stupid old optics in here.

O

05 02 41 40

CC

Roger. Copy.

05 02 41 43

LMP

Now, the next time we do, I'm going to stick to the NORMAL mode, as we originally planned, and see if that works out a little better.

05 02 41 50

CC

Okay.

05 02 43 00

CC

Apollo 7, Houston. One minute LOS Ascension; Tananarive at 122 plus 54.

05 02 43 08

CDR

Roger.

O

## TANANARIVE (REV 78)

05 02 54 28 CC Apollo 7. Houston through Tananarive.  
05 02 54 34 CDR Roger. Loud and clear.  
05 02 54 38 CC Roger.  
05 02 59 05 CC Apollo 7, Houston. One minute LOS Tananarive;  
Carnarvon at 123 plus 09.  
05 02 59 13 CDR Roger.

## CARNARVON (REV 78)

05 03 11 15 CC Apollo 7, Houston through Carnarvon.  
05 03 11 18 CDR Roger. Loud and clear.  
05 03 11 20 CC You are loud and clear.  
05 03 11 22 LMP We're starting ... pitch down.  
05 03 11 28 CDR Do you want me to put ... ball number 1?  
05 03 11 37 CC Stand by.  
05 03 11 42 LMP Roger. We're not near our perigee by any means.  
05 03 11 49 LMP We're about 40 minutes away from perigee.  
05 03 11 52 CC Affirmative.  
05 03 12 05 CC Apollo 7, Houston. Affirmative. We'd like  
GDC on ball 1.  
05 03 12 10 LMP Roger. You've got it.  
05 03 12 14 CC Roger.  
05 03 12 18 CDR Do you have all bands or GDC?  
05 03 12 26 CC GDC.  
05 03 12 28 CDR GDC.  
05 03 12 31 LMP Jack, this is Walt. I've got a comment on this  
food you might pass on to Frank and those guys.

This high-calorie stuff that's got everything hiked up with calories is just getting to us something fierce. In order to get a lot of calories in a small weight, everything has been hiked up, and it's all got a sweet taste. Something you think tasted real good to you, but by the time you get to the end of the bag you can't really look it in the eye very well.

05 03 12 59      CC      Roger. I understand that.

05 03 13 01      CDR      The crux to this thing was to save stowed weight, and as a result, the food was raised in caloric count, and it's all sweet stuff.

05 03 13 16      CC      Roger.

05 03 13 18      LMP      You also might pass on to that crew, Jack, in case they haven't selected their menu yet. I had a tendency to pick out a menu which had individual items that I liked a lot out of the samples. If I had it to do over again, I would try to make sure I had a wider variety of acceptable foods.

05 03 13 38      CC      Okay. Copy that, Walt. We are about 30 seconds LOS Carnarvon; Guam at 123 plus 19.

05 03 13 46      CDR      Do you want to leave this on GDC ball 1?

05 03 13 50      CC      Affirmative. We'll pick it up at Guam.

05 03 13 53      CDR      Okay.

O 05 03 13 56 CC Wally, is it about the same torque that you've observed previously?

05 03 14 00 CDR No, we're not near perigee at this time. We want to see if we can get some data, then we'll go back and realign the GDC.

05 03 14 07 CC Roger.

GUAM (REV 78)

05 03 21 42 CC Apollo 7, Houston through Guam.

05 03 21 43 LMP Roger. ...

05 03 21 48 CC Roger. Walt, I would like to have you turn your S-band AUX tape switch OFF.

05 03 21 58 LMP OFF.

05 03 22 00 CC Roger. Wally, we've noticed that the tailoff value that is presently loaded into the - -

05 03 22 08 LMP What was the answer, Jack, to your obtaining our TV switch ON awhile back when it was OFF? Did you find out about that?

X

05 03 22 19 CC Roger. Walt, it was the tape switch that we observed on telemetry on the ground, and we thought it was the TV switch.

05 03 22 27 LMP Okay. Understand. And is our transponder secondary completely blotched?

05 03 22 38 CC Stand by.

05 03 22 45 CC Apollo 7. On the secondary transponder, that's not definite yet, but we don't want to reselect it at this time.

O

0 05 03 22 55 LMP Understand.

05 03 22 57 CC Okay. And something else that we would like to discuss here: the tailoff value that is presently loaded in the computer for the CMC is not large enough for what we have observed on your burns. We would like to load a new value into the computer with the following procedure. Are you ready to copy?

05 03 23 22 CMP Wait one.

05 03 24 04 CMP Roger. Jack, go ahead with your procedure.

05 03 24 07 CC Okay. VERB 21, NOUN 01, ENTER; 3003 ENTER; 74 ENTER. That's it.

05 03 24 29 CMP Roger. Is that it?

0 05 03 24 30 CC That's it.

05 03 24 33 CMP Okay ...

05 03 24 42 CC Could you say again, Donn? You cut out there just as you gave it.

05 03 24 46 CMP Roger. VERB 21, NOUN 01, 3003, then 74.

05 03 24 52 CC Roger. That is correct.

05 03 24 54 CDR Jack, that sounds like an SOP for that power technique.

05 03 25 04 CC Say again, 7.

05 03 25 11 CDR Okay. No strain.

05 03 25 13 CC Roger.

05 03 25 15 CMP Jack, this is CMP.

05 03 25 17 CC Go ahead, Donn.

○ 05 03 25 19      CMP      On these landmarks tomorrow: I see we've got three passes scheduled, don't we?

05 03 25 26      CC      Affirmative.

05 03 25 28      CMP      Okay. I would like to suggest that we devote one pass - or at least part of a pass - to doing some unknown landmark tracking, because I found that up here in flight that it is fairly easy to track any given object on the ground once you see it. The trouble with these known landmarks is that they are damn hard to bring in in the first place, because either the AUTO optics doesn't work or they are outside the field of view sometimes. I have found that you can track with the sextant fairly easily. So how about running that around with the G&N people, and see if they are agreeable. We don't have anything in the flight plan at all about checking unknown landmark performance.

05 03 26 10      CC      Roger. Copy that. We will toss it around here and let you know.

05 03 26 36      CC      Apollo 7, Houston.

05 03 26 37      IMP      Go ahead, Jack.

05 03 26 38      CC      Roger. We would like to zero some attitude errors by taking the BMAG switches and going to rate 2 momentarily and then back to add 1, rate 2.

○

0 05 03 26 51 CDR We are not getting much torquing this time, so there is not much sense spending - spending input on this particular area.

05 03 26 59 CC Roger. We just thought we would watch it as you went through perigee.

05 03 27 03 CDR Yes. I think what we will do is try to give it to you on the rest of this pass where we are tracking because we are going to go back through it again.

05 03 27 09 CC Roger.

05 03 27 10 CDR But we are going to face up to perigee.

05 03 27 13 CC Roger. Copy that. You've got 1 minute LOS Guam; Hawaii at 123 plus 34.

HAWAII (REV 78)

05 03 35 06 CC Apollo 7, Houston through Hawaii.

05 03 35 09 CDR Aloha.

05 03 35 11 CC Roger. We would like to - if you're not busy with the computer, we would like to send you an update.

05 03 35 22 CDR Go ahead. Wait; hold it a second. You have got it.

05 03 35 27 CC Okay. Coming up. I'm ready with a NAV check when you are ready to copy.

05 03 35 44 CDR Go ahead.

05 03 35 45 CC Roger. 128 30 0000 minus 0266 minus 12940 0999.

05 03 36 09 CMP Roger. 128 30 0000 minus 0266 minus 12940 0999.

0 05 03 36 18 CC Roger. And on that procedure that we gave you for loading a different DELTA-V tailoff in the computer: after you get that done, we'd like you to read it out, Donn, and check it, and if you need the procedure to do that, I have it.

05 03 36 39 CMP Roger. Jack, that's just a standard erasable update. I'll do it when you get done uplinking.

05 03 36 44 CC Okay. There's no hurry on it.

05 03 36 49 SC Jack, I would like to make a comment or two regarding this star horizon business.

05 03 36 55 CC Okay. Go ahead.

05 03 36 57 SC Well, I've examined the horizon in the telescope and sextant under all different light conditions varying from total darkness to broad daylight with the sun overhead, and I can find no reliable line or band or anything in there that's repeatable at all distant sun angles. Furthermore, I know that stars in general are not visible during the daytime. About the only way you can see it is to get AUTO of the optics to pull one into the sextant for you. Obviously, if you're doing P23, you can't use AUTO optics to pull the star in there, so the chances of this thing ever working out are pretty slim, I guess.

05 03 37 34 CC Roger. Copy that.

0

○ 05 03 37 36 CMP Roger. I suggest that we try one run of this just to prove that it won't work and then re-group and plan to do some star-to-lunar landmark business later on in the flight somewhere.

05 03 37 49 CC Roger. We copy that.

05 03 38 07 CDR It's kind of insulting to realize that the same light bands and horizons are there that we reported back in Mercury days.

05 03 38 17 CC Roger.

05 03 39 20 CDR Jack, you done with your update?

05 03 39 21 CC Affirmative, 7. Computer is yours.

05 03 39 44 CC Apollo 7, Houston.

05 03 39 47 CDR Go ahead.

⊖ 05 03 39 49 CC Donn, on this star horizon sighting here: if you're at the roll, pitch, and yaw attitudes that we gave you and have the trunnion and shaft values that we gave you also set in, the horizon should be visible in the landmark line of sight and the star visible in the star line of sight.

05 03 40 12 CMP ...

05 03 40 18 CC And, Apollo 7, as we lose you here over Hawaii, we're going to try ARIA on S-band. Do you want to turn up your S-band volume up? I think we may have better COMM with ARIA than Huntsville.

ARIA 3 (REV 78)

○ 05 03 41 32 CC ARIA 3. Go REMOTE.

05 03 42 12 CC Apollo 7, Houston through ARIA.  
05 03 42 39 CC Apollo 7, Houston through ARIA.  
GOLDSTONE through GUAYMAS (REV 78)  
05 03 45 12 CC Apollo 7, Houston.  
05 03 45 26 CMP Go ahead.  
05 03 45 27 CC Roger. Donn, we lost you just over Hawaii. Did  
you copy my remarks on the star horizon check?  
05 03 46 04 CMP Roger. Do you read?  
05 03 46 11 CMP ...  
05 03 46 17 CC Apollo 7, Houston.  
05 03 46 18 CMP Loud and clear.  
05 03 46 20 CC You're loud and clear. Donn, we had an LOS there,  
Hawaii. Did you - were you able to copy my re-  
marks on the star horizon check?  
05 03 46 29 CMP Roger, Jack.  
05 03 46 30 CC Okay.  
05 03 46 32 CDR We heard you.  
05 03 46 33 CC Real fine.  
05 03 47 01 CC Wally, we lost - LOS Hawaii. Were you - did you  
get my comments to turn up S-band? We were try-  
ing to get ARIA 3 on S-band.  
05 03 47 11 CDR Negative. We missed that. I did hear you just  
before this last call. You tried to talk to Donn  
again, and it came up on S-band. We didn't hear  
it.

0 05 03 47 20 CC Okay. ARIA works so good down there in Australia on S-band that we were going to try and use ARIA instead of Huntsville to get a little better COMM.

05 03 47 30 CDR Roger. We'll try that a couple more times.

05 03 47 33 CC Okay. Real fine.

05 03 47 35 CDR What's the next time?

05 03 47 39 CC We will have ARIA 3 the next pass over - in between - about the same place.

05 03 47 49 CDR I agree.

05 03 48 00 CDR We got ARIA 3 in the flight plan. Roger.

05 03 48 45 CDR Hey, Jack, we are approaching perigee, and I'm going to give you GDC on ball number 1.

05 03 48 52 CC Roger. Copy.

05 03 48 57 CDR We're not pitched up too much local vertical; it's about 33 - 34 degrees.

05 03 49 02 CC Okay.

05 03 49 04 CDR This is a long pass; they might be able to check this thing.

05 03 49 10 CDR You've got local vertical on DSKY and GDC on number 1.

05 03 49 14 CC Copy that.

05 03 49 21 CDR And you can make note of the pitch thruster working.

05 03 49 27 CC Roger.

05 03 49 28 CDR We're in tight deadband to get this DTO done.

05 03 49 32 CC Roger.

05 03 49 34 CDR With limit cycle ON.

05 03 49 57 CT Guaymas LOS.  
TEXAS (REV 78)

05 03 52 34 CDR Houston, Apollo 7.

05 03 52 36 CC Go ahead, 7.

05 03 52 37 CDR Roger. On that experiment -

05 03 53 06 CDR I stopped pulsing there, Jack.

05 03 53 10 CC Roger, Wally.

05 03 53 12 CDR All VHF channels are OFF.

05 03 53 17 CC Okay.

05 03 53 23 CDR We're now pulling up into a relative climb. We'll  
see what happens with this thing. Watch that  
pitch rate.

05 03 53 37 CC Roger. One minute LOS Texas; Tananarive at 124  
plus 27.  
TANANARIVE (REV 78)

05 04 28 16 CC Apollo 7, Houston through Tananarive.

05 04 28 20 CDR Roger.

05 04 28 28 CMP Houston, Apollo 7.

05 04 28 30 CC Go ahead, 7.

05 04 28 31 CMP Roger ... comments on that P23.

05 04 28 40 CC Donn, we would like to wait until Guam to get  
your comments on the P23 - on the results of P23.

05 04 28 50 CMP Okay. How soon is that?

05 04 28 53 CC Guam acquisition is 124 plus 54, unless you are  
going to be asleep then.

0 05 04 29 00 CMP I'm supposed to be; that takes almost an hour out of it, Jack.

05 04 29 05 CMP Were ... change over.

05 04 29 13 CC Okay. Why don't you give them to us now, then? We don't want to interfere with your sleep cycle.

05 04 29 18 CMP What we'll do is get a little tape and dump it.

05 04 29 23 CC Okay. That is fine.

05 04 29 25 CDR Okay. There's nothing critical ... too long. It will be a lot better on tape ... I guess we could call it that.

05 04 29 41 CC Okay. Wally, we are having a hard time reading you here at Tananarive. Perhaps you could put your comments on the torquing as you went through perigee on the DSE tape, also, and we will dump that, too.

05 04 29 57 CDR We'll put that on tape, and ... over Guam. I'd like to have Donn turn in by then.

05 04 30 06 CC I couldn't pick that up. We will dump that at the next possible time.

05 04 30 14 CDR Roger.

05 04 32 40 CC Apollo 7, Houston.

05 04 32 44 CDR Go ahead, Jack.

05 04 32 46 CC Roger. On the tape that is presently there, do you have any high bit rate recordings on it?

05 04 32 55 CDR Negative.

0

05 04 32 58 CC Roger. Copy that. We will be dumping starting at Mercury and Guam and through Hawaii if needed.

05 04 33 06 CDR Roger. When do you want S-band up for the ARIA aircraft?

05 04 33 11 CC The S-band with ARIA will be after Hawaii.

05 04 33 16 CDR Roger.

05 04 34 24 CC Apollo 7, Houston. One minute LOS Tananarive; the Mercury at 124 plus 51.

05 04 34 31 CDR Okay, Jack. We will talk to you then.

05 04 34 33 CC Roger. I'm going off duty. I'm going to give you to Ron.

05 04 34 37 CDR That was a good show, Jack; I enjoyed it.

05 04 34 40 CC It was a good shift today; a good show.

MERCURY (REV 79)

05 04 52 26 CC Apollo 7, Houston through Mercury.

05 04 52 29 CDR Good evening, Ron.

05 04 52 31 CC Good evening.

05 04 52 33 CDR I was talking to Jack about this perigee torque problem - I think that's probably a good name for it - and we'd gone across the - well, I'll tell you about the west coast going down over Mexico south, actually over the Panama Canal Zone on the last pass.

05 04 52 53 CC Roger.

05 04 52 54 CDR We're set up for a star horizon check, locked up pretty tight on 356 degrees inertial, which as

we came across the coast went to SCS zero degrees pitch. The deadband was real tight; this was in the SCS attitude hold band and MIN deadband lower range limit cycle ON. As soon as the test was terminated, I turned all SCS channels off to conserve fuel, and then I had no pitch rate, no roll rate, no yaw rates on the needles. Then about - I'd say 10 minutes, we went to perigee; it was actually to 121 hours and 51 minutes, I think it was - 123 hours 51 minutes. We start pitching up to about three-tenths of a degree per second as we approach perigee, and then it would start pitching down, and actually went back down to zero again in rate.

05 04 54 03

CDR

And when we actually went to drifting flight, the pitch was about 35 degrees up, pitch up local vertical; it went down to about minus 40 degrees or 310 to 320 degrees local vertical. That's where the rate stopped, and then it started back up slightly during the pitch. Torque was just in pitch in that case.

05 04 54 28

CC

Roger. We copy.

05 04 54 33

CDR

That's a new one that I've never heard of before. We suspected something like that with the S-IVB and even with the Agena, but this really showed it to us.

05 04 54 45 CC Roger. Sure did.

05 04 54 51 CDR Another interesting thing we saw as we went down through South America: we'd seen the hurricane earlier today, went right over it, in fact. You could see the eye of it as a little depressed dimple in the center of the hurricane.

05 04 55 04 CC Roger.

05 04 55 06 CDR All the dense thunderheads as we went over South America had flat tops and rather large ones, and they had little depressions in the center just like the hurricane, and had the reversed flow pattern on the flat tops, which you would expect in the southern latitudes - the reverse coriolis effect.

05 04 55 27 CC That's interesting.

05 04 55 29 CDR I'd never heard of that effect before, you know, on the top of a thunderstorm.

05 04 55 35 CC I hadn't either.

05 04 55 40 CDR All of Donn's experiments bombed.

05 04 55 45 CC Roger.

05 04 55 46 CDR The horizon isn't as good as everybody says it is, although those of us who have flown said it's exactly the way it is right now.

05 04 55 53 CDR I'm sorry to define the star-to-horizon check didn't work. The landmark optical tracking didn't work. We tried to use AUTO optics, and

they did not bring it in. Tomorrow we're going to ...

GUAM (REV 79)

05 04 56 19 CDR What do you have for us?

05 04 56 26 CC I missed your - in the handover there, your star horizon didn't work, and everything after that, Wally.

05 04 56 38 CDR Houston, Apollo 7.

05 04 56 41 CC Apollo 7, Houston. Go.

05 04 56 43 CDR Roger. Did you get the last?

05 04 56 44 CC Negative. I missed everything after Donn's horizon not got and the star horizon didn't work.

05 04 56 51 CDR That's correct. And the program 23 didn't work, and it wasn't designed to work on the earth orbit and particularly on the SUNDISK. We lost that fight on the ground, but I think we won it up here.

05 04 57 05 CC Roger.

05 04 57 07 CDR There's always a question of using up fuel on it. We're going to try tomorrow, unknown landmarks. Known landmarks did not work; the AUTO optics did not bring them in, and they're hard to find, particularly in the earth-orbit position.

05 04 57 30 CC Roger. We're working up the chart now for you for tomorrow.

05 04 57 33 CDR Very good. How was the day back in Houston?

05 04 57 39 CC It was a nice day here.

05 04 57 41 CDR Very good. Looked good to us.

05 04 57 45 CC Apollo 7, Houston. Opposite omni.

05 04 57 47 CDR Roger.

05 04 58 03 CDR We spend our quiet evenings in at this time preparing our next TV show, and we'll have one for you tomorrow.

05 04 58 12 CC Very good.

05 04 59 14 LMP Hey, Ron. You got time to give us a chart update?

05 04 59 17 CC Roger. Stand by. And, Walt, BIOMED to your position.

05 04 59 25 LMP Got it.

05 04 59 30 LMP You guys better watch the waterboiler pretty close. We had it going dry on us numerous times for several days, and it seems to happen over a period of about 4 seconds ...

05 04 59 49 CC Roger. You say it seems to happen over a period of 4 seconds?

05 04 59 54 LMP Oh, about 30 seconds time if you go from operating normally to tank low on the steam pressure, it seems like.

05 05 00 04 CC Roger. We'll keep a close eye on it then.

05 05 00 48 CC Apollo 7, Houston. About 30 seconds LOS; Hawaii at 09. Leave your map update and block data at that time.

○ 05 05 00 57 LMP Roger. And we won't need the right ascension, Ron. We really don't make any use of it, so unless we ask for it, why don't we just skip those right ascensions?

05 05 01 07 CC Oh, Roger. I concur.  
HAWAII (REV 79)

05 05 11 48 CC Apollo 7, Houston, Hawaii.

05 05 11 48 LMP Roger. Ron, I'm ready to copy the update.

05 05 11 54 CC Roger. Your map update: REV 79, GET 124 plus 47 plus 02, longitude 103.3 east.

05 05 12 17 LMP Roger. Ready to copy block data.

05 05 12 20 CC Roger.

○ 05 05 12 28 CC Apollo 7, Houston. Block data number 14: 081 dash 3 Alfa plus 312 plus 1360 127 plus 45 plus 11 3382, 082 dash 3 Alfa plus 302 plus 1360 129 plus 21 plus 34 3524, 083 dash 3 Bravo plus 253 plus 1340 130 plus 53 plus 56 2856, 084 dash Charlie Charlie minus 076 plus 1700 132 plus 33 plus 15 1858, 085 dash Alfa Charlie plus 072 minus 0220 133 plus 19 plus 17 4077, 086 dash 2 Charlie plus 184 minus 0250 134 plus 53 plus 55 3706.  
Houston, over.

05 05 14 44 LMP I didn't copy the last three. Will you give it to me again?

○ 05 05 14 47 CC Roger. Area 086 dash 2 Charlie plus 184 minus 0250 134 plus 53 plus 55 3706. Over.

05 05 15 10 LMP Roger. Readback follows: 081 dash 3 Alfa plus 312 plus 1360 127 plus 45 plus 11 3382, 082 dash 3 Alfa plus 302 plus 1360 129 plus 21 plus 34 3524, 083 dash 3 Bravo plus 253 plus 1340 130 plus 53 plus 56 2856, 084 dash Charlie Charlie minus 076 plus 1700 132 plus 33 plus 15 1858, 085 dash AlfaCharlie plus 072 minus 0220 133 plus 19 plus 17 4077, 086 dash 2 Charlie plus 18 - didn't get the last number - minus 0250 134 plus 53 plus 55 3706. Over.

05 05 16 24 CC Roger. Your latitude for area 086 dash 2 Charlie is plus 184.

05 05 16 33 LMP Roger. Plus 184. And Wally's got a failure to report on his harness. He had one lead that was coming loose. He put it together the last time and taped it to keep it there, and apparently, it's now in a state of failure down where it goes into the body connector at signal conditioner, and he wants to know can they receive data on him with only his three good sensors. Over.

05 05 16 57 CC Roger. What's the color of the signal conditioner that there's a plug that it's going into?

05 05 17 06 CC The white one or the yellow one?

05 05 17 09 LMP It's the lower external lead.

05 05 17 15 CC Roger. Stand by.

05 05 17 21 LMP It's the blue signal conditioner.

## HUNTSVILLE (REV 79)

05 05 18 06 CT Huntsville AOS.

05 05 18 24 CC Apollo 7, Houston.

05 05 18 30 CC Roger. Real weak, Walt. We can work up a swap of the signal conditioners or the leads going to the signal conditioners, and we'll try to pass that up to you over Tananarive.

05 05 18 50 LMP Okay. Thank you.

05 05 18 56 CC Sorry about that.

05 05 18 59 LMP Roger. Thank you.

05 05 19 57 LMP This is Apollo 7. How do you read me, Ron?

05 05 20 03 CC Apollo 7, Houston. We're reading you through Huntsville. We had ARIA just between Hawaii and Huntsville when you were reading back on the block data, and it was good at that time.

05 05 21 11 CT One minute to ...

GUAYMAS (REV 79)

05 05 22 35 CC Apollo 7, Houston. Did you call?

05 05 22 38 CT Negative, Ron. Just standing by.

05 05 22 42 CC Roger. About 1 minute to LOS now. Tananarive at 01.

05 05 22 47 CDR Roger.

05 05 22 58 CDR Did you catch our TV pass today?

05 05 23 00 CC Affirmative. It was a good one again. The quality wasn't quite as good as it was the other

2 days. I've got some dope on that ALC switch I'll try to pass up to you sometime this evening.

05 05 23 12 CDR Okay. It never seems to work as good with the ALC in.

TANANARIVE (REV 80)

05 06 05 03 CC Apollo 7, Houston through Tananarive.

05 06 05 06 LMP Roger, Ron. Reading you five-by. How me?

05 06 05 09 CC Roger. Not too bad this time, Walt. Have a little question on the chlorination. Have you chlorinated yet?

05 06 05 16 LMP No, and it's not our intention to chlorinate today. We chlorinated yesterday. You don't have any objections to chlorinating every other day, have you?

05 06 05 28 CC Roger. I understand you're intent on the thing. Do you still have a bad taste in it? Is this the reason?

05 06 05 37 LMP We're just now starting to feel well enough about cold, and the water has tasted horrible ... as we can and when we chlorinate, the taste of it afterward is very bad for several hours, and it's not really good for a ... cold.

05 06 06 01 CC Okay. We understand and do not chlorinate today. We'll pass it today and chlorinate tomorrow.

05 06 06 11 LMP Okay. Very good. I think that's a pretty sensible schedule. We'll catch the chlorination

tomorrow. Got two questions for you, Ron, and

...

05 06 06 22 CC Say again.

05 06 06 24 LMP One, what is the precise inclination of our orbit?  
And second, we'd like to get a chart update for  
our RCS chart onboard.

05 06 06 38 CC Roger. What is the precise inclination of your  
orbit? Is that what you said?

05 06 06 43 LMP Right. And Wally would like to hear the BIOMED  
sensors because he's getting shoot it up again.

05 06 06 52 CC Roger. We'll get your inclination on your BIOMED  
sensors. Walt, your inclination is 31.25.

05 06 07 10 LMP Roger.

05 06 07 11 CC And on your BIOMED sensors, what we want to use -  
or use the two good ones in the middle of your  
chest, and those two good ones will have to be  
connected to the blue signal conditioner, which  
means you're going to have to switch to wires  
that go into the signal conditioners.

05 06 07 34 LMP Okay. You want the two sternal leads to go to  
the blue signal conditioner, right?

05 06 07 42 CC Yes, that's affirmative.

05 06 07 45 LMP Okay. That means Wally will have to connect the  
connector of the other signal conditioner and use  
that lead to the sternal.

05 06 07 52 CC That's affirmative. That's affirmative.

05 06 08 56 LMP Okay. He'll try. If that doesn't work, we will just have to write it off, because he has been trying to piece that thing together for the last 126 hours. He'll try it.

05 06 08 09 CC Roger.

05 06 09 10 CC Apollo 7, Houston. One minute LOS; Mercury at 24.

05 06 09 17 LMP Roger. And when you can get it, we would like an update for onboard RCS chart.

05 06 09 23 CC Wilco. We will have it available at Mercury.  
MERCURY (REV 80)

05 06 26 32 CC Apollo 7, Houston through Mercury.

05 06 26 36 LMP Roger, Ron.

05 06 26 38 CC Okay. I got your RCS update for figure 3 dash 1.

05 06 26 52 LMP Roger. Go with it.

05 06 26 54 CC Roger. At 126 hours, total is 688 pounds, SCS redline 601, DAP redline 536, hybrid 263. And be advised that quad A is still right on the SCS redline. The rest of them are above.

05 06 27 29 CDR Quad A. I thought quad C was the first one we were going to be switching.

05 06 27 40 CC Roger. Stand by, Walt.

05 06 27 43 LMP And, Ron, I was given some numbers today that what the onboard meters should read when we switch to secondaries. Is that going to be open loop; and when I get down to that reading, I should switch; or will you be giving me later dope on switching?

05 06 27 59 CC We're keeping track of it, Walt, and will probably be giving you later dope on it, but those are the figures that we have at this time.

05 06 28 08 LMP Roger. And I was told that C was the closest to getting on the secondaries.

05 06 28 13 CC That is affirmative. As far as your onboard reading is concerned, it's 54 percent for C, 49 for D Delta, and A is 46 percent.

05 06 28 28 LMP Roger.

05 06 28 51 CC Apollo 7, Houston. Request you cycle O<sub>2</sub> tank two fan ON for 5 minutes and then OFF.

05 06 29 05 LMP Roger, Ron.

05 06 29 08 CC And when you get a chance, you can read out your service module RCS propellant quantities and your system test meter 5 A through D and 6 A through D.

05 06 29 23 LMP Roger. And I'll give you the quantities right now before I forget it. Can you have them standing by when we are coming over Hawaii to check Wally's BIOMED readouts?

05 06 29 33 CC Wilco.

05 06 29 36 LMP Okay. A through D: reading 51, blank 55 plus and 58. Over.

05 06 29 58 CC Roger. Copy.

05 06 30 01 LMP Say again the number for my chart?

05 06 30 05 CC Roger. The total for your chart is 688.

05 06 30 11 LMP Roger. 688. I will give you the test meter readouts.

05 06 30 13 CC Roger.

05 06 30 33 LMP Okay. For 5 C is 5 volts. Five D is 5 volts,  
6 Dog 5, 6 Charlie 4.8, 6 Baker 5, 6 Able 5.  
Over.

05 06 30 55 CC Roger. You have 5 Alpha?

05 06 31 03 LMP Okay. Five Alpha is 1.7.

05 06 31 10 CC Say again.

05 06 31 11 LMP Which should be on the order about 70 - degrees  
Fahrenheit, I believe.

05 06 31 17 CC Roger. Was that 1.7?

05 06 31 21 LMP That is affirmative. 1.7.

05 06 31 24 CC Roger. And I have your ground compute usable  
RCS propellant remaining if you would like those.

05 06 31 40 LMP Okay. Go with them.

05 06 31 42 CC Roger. It will be 46 percent, 50 percent, 45 per-  
cent, and 52 percent - A through D.

05 06 31 56 LMP Forty-six, 50, 45, 52?

05 06 31 59 CC Roger.

05 06 32 04 LMP How did you ever get Baker to be 50 and Dog to  
be 52?

05 06 32 11 CC I am not quite sure, but it works out that way.

05 06 32 35 LMP ...

05 06 32 38 CC LOS. I think I missed you.

HAWAII (REV 80)

05 06 43 44 CC Apollo 7, Houston through Hawaii. Standing by.

05 06 43 48 CDR Roger. We read you loud and clear.

05 06 43 50 CC Roger. Loud and clear.

05 06 45 22 LMP Hey, Ron, log the CMP with how many?

05 06 45 27 CC Say again.

05 06 45 36 CC Apollo 7, Houston. Say again.

05 06 45 38 CDR Would you log CMP with about 50 clicks for the last 5 hours.

05 06 45 45 CC Fifty clicks you say in the last 5 hours?

05 06 45 47 CDR Five-zero.

05 06 45 48 CC Roger.

05 06 45 49 CDR And CDR 30.

05 06 45 52 CC Roger.

05 06 45 53 LMP LMP 15.

05 06 45 56 CC Roger.

05 06 46 00 CDR How's Sir John doing with my BIOMED?

05 06 46 04 CC Roger. Looks like you're getting the AUXILIARY, the ones under your arms there going into the blue signal conditioner which is okay. We can do - we can do with that one.

05 06 46 18 CDR That's what you asked for, isn't it?

05 06 46 22 CC Not quite, but that's okay. With what we're trying --

05 06 46 25 CDR I thought you wanted the two sternals to go into the black and the two AUXILIARY into the blue.

05 06 46 37 CC No, we thought the broken wire was from the two sternal ones going into the blue --

05 06 46 46 CDR I think the low sternal is broken.

05 06 46 52 CC Okay, okay. I see what you're saying. The lower sternal is broken, but what we're trying to do - was get the two sternal ones to go into the blue signal conditioner.

05 06 47 02 CDR That's how they were originally.

05 06 47 05 CC Yes, right. But we wanted to switch the pieces of wire that go into the signal conditioner, the AUXILIARY wires that go into the signal conditioner - into the black signal conditioner. We wanted to use that lower piece of the wire and hook that piece of the wire to the center sensors.

05 06 47 36 CDR I won't have you change my spark plugs.

05 06 47 38 CC (Laughter) Okay. It's working okay the way it is. It's fine.

05 06 47 46 CDR Okay.

05 06 47 53 CC The good doctors say, "Thank you."

05 06 47 57 CDR Roger.

05 06 47 58 LMP You know Wally, anything for the doctor.

05 06 48 01 CC Roger.

05 06 48 09 LMP Say, I've kind of lost track. Is this day 8 or day 9?

05 06 48 15 CC I have to - wait one.

05 06 48 28 CC I got a time hack to end of mission, if you'd like that.

05 06 48 37 CDR I was trying to figure out how to get a big clock to count down.

05 06 48 40 CC (Laughter).

05 06 48 44 CDR Go ahead.

05 06 48 46 CC Roger. Stand by for 132 hours and 51 minutes.  
Five, four, three, two, one.

05 06 49 00 CC MARK.

05 06 49 01 CC 132 hours and 50 minutes.

05 06 49 03 CDR Beautiful. Is that drogues or mains?

05 06 49 17 CC That's to GETI burn 8.

05 06 49 22 CDR Oh, we got more to go?

05 06 49 24 CC Yes.

05 06 49 26 LMP What's the 6-day forecast on hurricane what's-  
its-name.  
HUNTSVILLE (REV 80)

05 06 51 18 CC Apollo 7, Houston.

05 06 51 40 CC Apollo 7, Houston.

05 06 52 16 CC Apollo 7, Houston.

05 06 52 48 CT On Houston to Huntsville, GSM question.

05 06 52 57 CC Apollo 7, Houston.

05 06 53 25 CC Apollo 7, Houston.

05 06 54 01 CC Roger. Wally, be advised on Gladys. We're not  
sure whether to move your boat or to move your  
landing point yet.

05 06 54 20 CT Huntsville LOS.  
TANANARIVE (REV 81)

05 07 32 52 CC Apollo 7, Houston through Tananarive.

05 07 32 56 LMP Roger, Ron.

0 05 07 32 58 CC Roger. I have your present battery status, ampere-hours remaining.

05 07 33 06 CDR Roger. Read it.

05 07 33 08 CC Roger. Alfa 31.4, Bravo 29.0, Charlie 39.5.

05 07 33 26 LMP Roger. Thank you. ... the way those numbers change, the only ones that are consistent are the ones you get earlier sometimes.

05 07 33 36 CC I missed that. Say again.

05 07 33 40 LMP Roger. The battery numbers.

05 07 33 42 CC Roger.

05 07 33 48 LMP Ron, I have a comment to pass on to Tananarive. Dumped the waste water there. ... disconnect. It failed to a 2B setting over by the waste water control panel, and when we dumped the waste water, a large puddle of water formed there. ... run that, and it performed pretty good, only ... could make a big difference.

05 07 38 28 CC Apollo 7, Houston. I can't make too much out of that, other than there was a large puddle of water by the water fitting on the waste water disconnect.

05 07 38 39 CDR Roger. That's affirmative. And you might look into putting a different type fitting back into the water control panel to solve the problem of water leaking there every time I dump.

0

O 05 07 38 55 CC We'll play back our tapes. Maybe we can read it off the tapes. I couldn't read you that time.

05 07 39 32 LMP Hey, Ron, we got several nice pictures of the west coast of Chili as we passed over last night.

05 07 39 41 CC Roger. That's good.

05 07 39 43 LMP Frames 93 through 97 on magazine S.

05 07 39 50 CC Roger.

05 07 40 39 CC Apollo 7, Houston. Did you receive my comments on Hurricane Gladys?

05 07 40 48 CDR Roger. I understand it's ...

05 07 40 52 CC Roger. In reality, it's due to hit Tampa at 18 00 Z tomorrow, on Thursday.

05 07 41 11 CDR ... Ron?

E 05 07 42 09 CC Apollo 7, Houston. One minute LOS; Mercury at 59.

MERCURY (REV 81)

05 08 01 39 CC Apollo 7, Houston through Mercury.

05 08 01 45 CDR Roger. Loud and clear.

05 08 01 46 CC Roger. Same here. I have a one-line flight plan update.

05 08 01 58 CDR Go ahead, Ron.

05 08 02 00 CC Roger. At time 130 plus 00, an oxygen fuel cell purge.

05 08 02 16 CDR Roger. At about the half-way mark, go to fuel cell purge.

O

05 08 02 21 CC Roger. And, Wally, if you want to go back to Walt on the BICMED, that'll get us squared away on the flight plan again.

05 08 02 33 CDR Okay.

05 08 02 42 CDR You got it.

05 08 02 44 CC Roger. Copy.

05 08 02 54 CDR We had one more bag failure: orange juice reconstitutable bag. I think Walt was trying to add some prune juice to it.

05 08 03 11 LMP It was the best thing in my dinner, too.

05 08 03 29 CC You didn't get the PT then, did you?

05 08 03 33 CDR Oh, very good. You're fighting back.

05 08 04 18 CC Apollo 7, Houston. We've got about 70 knots of wind in the eye of Gladys.

05 08 04 28 CDR Roger.

HAWAII (REV 81)

05 08 17 54 CC Apollo 7, Houston, Hawaii. Standing by.

05 08 17 59 CDR Roger.

05 08 18 00 CC Roger. We read you.

05 08 18 26 LMP Hey, Ron.

05 08 18 27 CC Roger. Go --

05 08 18 28 LMP We'll do the redundant component check on the next pass over the Mercury, okay?

05 08 18 34 CC Roger. That's fine.

05 08 18 36 LMP Okay. We are trying to eat dinner now.

05 08 18 38 CC Roger.

05 08 24 24 CC One minute to LOS; Redstone at 34.  
REDSTONE (REV 81)

05 08 34 24 CC Apollo 7, Houston. Redstone standing by.

05 08 34 28 CDR Roger.

05 08 34 29 CC Roger.

05 08 34 31 LMP Hey, Ron. Can you give us a readout on our  
O<sub>2</sub> manifold pressure on my mark?

05 08 34 38 CC Wait one. I don't have it yet.

05 08 35 10 CC Walt, we've got kind of a low signal strength  
here. We're trying to get high bit rate now.

05 08 35 16 LMP Okay. ...

05 08 35 21 CC Roger. I'll let you know if we get it.

05 08 35 30 CC Apollo 7. You want to try opposite omni?

05 08 35 59 CC Roger. We're reading 10<sup>5</sup> now.

05 08 36 04 CDR ...

05 08 36 16 CC Wait, Wally, we've lost it again.

05 08 36 27 CC We're about 1 minute to LOS; we'll pick it up  
over Mercury next time.  
MERCURY (REV 82)

05 09 34 50 CC Apollo 7, Houston through Mercury.

05 09 34 55 LMP Roger, Houston.

05 09 34 57 CC Roger. Loud and clear.

05 09 35 00 LMP Want to make a readout of our manifold pressure?

05 09 35 04 CC Roger. Stand by. We have no data yet.

05 09 35 45 CC 7, Houston. Looks like we've got a processing  
problem here for a little bit. I've got the

results of what we feel on the evaporator, if you would like to hear it.

05 09 35 57 LMP

Roger. I'd be very interested.

05 09 36 00 CC

Roger. When we're operating under low cyclic loads - cyclic heat loads, as we have been doing, the evaporator will dry itself out. This is basically caused by the evaporator boiling more water under low heat loads than is being supplied to it. The end result is drying of the evaporator. If the evaporator is left in AUTO, the back pressure valve remains open and completely evacuates the evaporator. When the water valve is now opened either automatically or manually, the first water that goes into the evaporator flash freezes. This stops any more water from getting into the evaporator until it thaws out. A couple of more comments: we feel the boiler will work normally, should it be called upon to take the entire heat load. Since the radiators have demonstrated that they could handle the heat load, should the evaporator foul up again, it should be reserviced and turned off until it is needed.

05 09 37 33 LMP

Roger. Ron, there's only one comment I have to add to that that makes sense. I assume with high heat load then, we wouldn't have any problem. We do notice the difference in temperature

in the spacecraft when the evaporator is running or not, but it seems like it runs a little bit all the time when it's on the line. The glycol evaporator outlet TEMP is regulated down under 45 most of the time. In the drop line completely well, we have a glycol evaporator outlet TEMP of 50 to 52 and sometimes a little higher.

05 09 38 06 CC Roger. We copy that.

05 09 38 09 LMP So next time it shuts down, I will service it, and we will stand by on it.

05 09 38 15 CC Roger.

05 09 38 18 LMP Have any data yet?

05 09 38 24 CC I got a little bit, right. We're sending the command for high bit rate. Stand by.

05 09 38 40 CC Okay. Looks good. We're reading 10<sup>4</sup> now.

05 09 38 45 LMP Roger. What are you reading now?

05 09 38 52 CC 103.

05 09 38 55 LMP Roger. The redundant component check is A-okay.

05 09 39 00 CC Roger. Wow!

05 09 39 02 CDR He's close to being fired, Ron. How do I get rid of him? (Laughter)

REDSTONE (REV 82)

05 10 05 57 CC Apollo 7, Houston, Redstone.

05 10 06 03 LMP Roger.

05 10 06 09 CC Apollo 7, Houston. We would like to cycle O<sub>2</sub> tank 2. Turn it on shortly and then we would like to see the OFF before we complete this pass.

O 05 10 06 22 LMP Was that the O<sub>2</sub> fan, Ron?

05 10 06 25 CC I'm sorry; O<sub>2</sub> fan.

05 10 06 28 LMP Roger. I'm running a DTO now, the one for the 60 percent on the CRYO tank. I've got both fans, both heaters OFF. I'm assuming when I finish this run on it that that DTO is complete. Can you verify that for me?

05 10 06 42 CC Roger. Negate my last on the fan switch, and we'll verify that shortly.

05 10 07 29 CC Apollo 7, Houston.

05 10 07 32 LMP Go ahead.

05 10 07 33 CC Roger. That does complete the 60 percent. We still have one more at the low end prior to re-entry where it doesn't work out, doesn't conflict.

05 10 07 46 LMP The onboard copy of the DTO, which I assume you have there, shows only 90 plus or minus 5 and 60 plus or minus 5 or last day.

05 10 08 04 CC Roger. We'll check on it now.

05 10 08 48 CC Walt, it looks like on the DTO there, that "or last day" should have been "and last day."

05 10 08 57 LMP Okay. I'll give you a hack on how long it takes to run this, and we'd like to find out if we can't work it in the last day. We'll see.

05 10 09 04 CC Roger. Thank you.

05 10 09 06 LMP I started it at about 129 hours and 45 minutes, I guess.

O

05 10 09 14 CC Roger.

05 10 09 47 LMP Ron, do you have time to give us a map update?

05 10 09 51 CC Roger.

05 10 10 39 CC Apollo 7, Houston. You ready to copy?

05 10 10 45 LMP Go ahead.

05 10 10 47 CC Roger. REV 82, GET 129 plus 13 plus 13, longitude 35.1 east.

05 10 11 08 LMP Ron, you cut out. Could you try it again?

05 10 11 11 CC Roger. GET 129 plus 13 plus 13, longitude 35.1 east, REV 82.

05 10 11 28 LMP Roger. I got it.

05 10 12 26 CC Apollo 7, Houston. Thirty seconds LOS; Ascension at 31.

ASCENSION (REV 83)

05 10 31 05 CC Apollo 7, Houston through Ascension.

05 10 32 05 CC Apollo 7, Houston.

05 10 32 45 CC Apollo 7, Houston.

05 10 33 11 CC Apollo 7, Houston.

05 10 33 50 CC Apollo 7, Houston.

05 10 34 45 CC Apollo 7, Houston.

05 10 35 40 CT Voice Control, this is --

05 10 36 11 CC Apollo 7, Houston.

05 10 36 47 CC Apollo 7, Houston.

05 10 37 36 CC Apollo 7, Houston.

05 10 38 35 CC Apollo 7, Houston. Transmitting in the blind.

We have fuel cell 2 O<sub>2</sub> flow ON.

## MERCURY through GUAM (REV 83)

05 11 08 13 CC Apollo 7, Houston through Mercury.

05 11 08 18 CDR Roger. Go ahead.

05 11 08 21 CC Roger. Read you.

05 11 08 23 CDR Thank you.

05 11 08 31 CC 7, Houston. Got a couple of onboard readouts  
I would like to cut.

05 11 08 38 CDR Go ahead.

05 11 08 39 CC Roger. Pyro battery voltages and batt C volt-  
age.

05 11 08 51 LMP Hey, Ron. We read the pyro battery voltage a  
little earlier this evening and passed it down.  
I guess it was before your shift, but they were  
both reading 37 volts.

05 11 09 01 CC Roger. I missed it; sorry.

05 11 09 08 LMP Battery C is 36 volts.

05 11 09 13 CC Roger. Copy. And could you check your O<sub>2</sub> purge  
switch on fuel cell 2?

05 11 09 31 LMP Thank you, Ron.

05 11 09 49 LMP Hey, Ron. What are you guys reading out for the  
O<sub>2</sub> tank pressures?

05 11 09 58 CC O<sub>2</sub> tank pressures?

05 11 10 01 LMP Right. I've got the ... on.

05 11 10 32 CC Apollo 7, Houston. We're reading 846 on tank 1  
and 827 on tank 2.

05 11 10 41 LMP Roger. Thank you.

05 11 10 57 CC 7, Houston. The O<sub>2</sub> flow looks good now on fuel cell 2, and you can continue with 3. And we could use a general rundown on your crew health, the medication, and the amount of sleep, what have you.

05 11 11 16 LMP Well, this is the LMP. I had another Actifed the night before last. That makes two I've had. My ears are getting more difficult to clear than they have been. Sometimes I can clear one, and sometimes I can't. I feel very good otherwise. I'm a little bit concerned about the lack of any nose drops such as Neo-synephrin on board, and it seems to me if we had something like that, we'd be able to at least make a stab and let my ears get cleared on the reentry.

05 11 11 54 CC Roger. Copy that. Opposite omni, Apollo 7.

05 11 12 05 CDR Roger. We just got a group of islands on frame 97, magazine Sierra. That is at 13 hours 11 minutes and 40 seconds.

05 11 12 23 CC Roger.

05 11 12 32 CMP Hey, Ron. My sleep last night: I got, oh, about 7 hours of sleep which was very sound sleep, the best I've got coming up here, I guess.

05 11 12 42 CC Roger.

05 11 12 46 CDR I think we've all been averaging good sleep lately. Donn's been sleeping much better. He was the one who was way behind on sleep. And because we switched his day to - to go to bed at night at 4 o'clock which is pretty clever for anybody to try.

05 11 12 59 CC Right.

05 11 13 02 CDR And he is finally acclimated to that schedule. All three of us have varying forms of cold - various forms of cold. Mine is still a head cold, and that's about my problem. I'm off pills these days.

05 11 13 16 CC Roger.

05 11 13 27 LMP What do the doctors have in mind for head clearing on reentry?

05 11 13 34 CC We're counting on three Actifed.

05 11 13 42 LMP You mean three per man?

05 11 13 46 CC (Laughter) Negative. One each, Donn.

05 11 13 53 LMP Why don't you suggest to 'em that they do that as flight surgeons for airplane drivers? I haven't seen that work yet.

05 11 14 02 CC Roger. We would use a hole in the helmet probably, couldn't we?

05 11 14 09 CDR I think that's what you're going to find. We'll come in with our helmets off.

05 11 14 17 CC Roger. We will advise.

05 11 14 20 CDR You could try. How's that for a B52 status report? (Laughter)

05 11 15 02 CC Apollo 7, Houston. I've got a couple of comments on TV.

05 11 15 07 CDR Go ahead.

05 11 15 10 CC Roger. On the ALC switch --

05 11 15 13 CDR ... go ahead, Ron.

05 11 15 14 CC Roger. On the ALC switch, have it out - ALC out - when the windows or flood lights are in the field of view or when you're panning across the spacecraft. This will give a better picture of the darker areas.

05 11 15 35 CDR Roger.

05 11 15 36 CC And, of course, have it in when light sources are not in the field of view.

05 11 15 45 CDR Okay.

05 11 15 46 CC And when the flashlight - down there - when the flashlight shines directly on an area, this area only shows up as a white blob. So it's good for pointing, but it doesn't help the picture at all.

05 11 16 01 CDR Okay. Let's see, we'll dolly up and - on our screen ... tomorrow morning.

05 11 16 13 CC Roger.

05 11 16 35 CC Walt, the doctor recommends one more Actifed prior to sleep tonight, if you feel necessary.

05 11 16 46 LMP I don't feel like it does me a bit of good.

05 11 16 56 CC Roger. We still feel it'll probably help a little though.

05 11 17 00 LMP For the last 2 or 3 days, there's been a heck of a lot. We don't have that much on board. We got enough for pain and seasickness and stuff like that, but nothing for colds.

05 11 17 23 CC Roger. We're kind of in the same position down here, also, when you get a cold.

05 11 17 29 LMP Roger. That's right.

05 11 18 50 CC Apollo 7, Houston. One minute LOS; Redstone at 39.

05 11 18 55 CDR ... just off the China coast in the East China Sea.

05 11 19 03 CC Say again, missed that.

05 11 19 05 CDR The islands I recorded are just off the East China coast.

05 11 19 14 CC Roger.  
REDSTONE (REV 83)

05 11 38 30 CC Apollo 7, Houston, Redstone. Standing by.

05 11 38 36 CDR Roger.

05 11 38 40 CC Roger. Loud and clear.

05 11 43 16 CC Apollo 7, Houston. We'll log about now for a completion of your stratification tester.

05 11 43 28 CDR Roger.

05 11 43 39 CC The good old U.S.A. got another gold medal tonight: Tommy Smith in a 200-meter race in a time of 19.78.

05 11 43 53 LMP My gosh! They're a new ...

05 11 43 55 CC Roger.

05 11 43 58 CC We just got another one: Bob Seagren in a pole vault with a height of 17 feet 8 and 1/2 inches.

05 11 44 13 LMP Say, things aren't too dull down there?

05 11 44 16 CC Right.

05 11 46 03 CC Apollo 7, Houston. One minute LOS Redstone at 04, and, Wally ...

05 11 46 09 CDR Roger. ... K2 watchband in. Thank you.

05 11 46 12 CC Roger. You can rest in peace tonight; the Chronicle described the flight of Apollo 7 to date as high quality.

05 11 46 22 CDR Wow! Boy, we ought to quit while we're ahead.

05 11 46 28 SC We're over the hill on the halfway anyway, and that's a good sign.

05 11 46 31 CC That's affirmative.  
ASCENSION (REV 84)

05 12 05 32 CC Apollo 7, Houston through Ascension.

05 12 05 38 CMP Roger. Ron, good morning.

05 12 05 40 CC Good morning. How's the night's sleep?

05 12 05 51 CMP Hey, Ron. You got any dope on the Olympics this morning?

05 12 05 57 CC Say again, Donn.

05 12 06 00 CMP We were just wondering who were the latest gold medal winners down in Mexico.

0 05 12 06 08 CC Roger. Like to check a couple of switches there first, and then I'll pass it up to you. Can you check your O<sub>2</sub> tank 1 and 2 heater switch to the AUTO position?

05 12 06 24 CMP Roger. Ron, I got 1 in AUTO and 2 OFF.

05 12 06 35 CC Roger. Are those the heaters or fans?

05 12 06 39 CMP Fans.

05 12 06 41 CC Roger. Those are - fans are correct. How about the heater switch? Are they both in AUTO?

05 12 06 48 CMP ... you want them OFF?

05 12 06 55 CC Negative. We want them in the AUTO position.

05 12 07 38 CC Donn, we had a couple of Gold Medal winners down there tonight. Bob Secru - Seagren, I'm sorry - won at pole vault at 17 feet 8 and 1/2 inches.

05 12 07 58 CMP Pretty tall reach.

05 12 08 00 CC Roger. And Tommy Smith won the 200 meter in 19.78.

05 12 08 13 CMP Moving on, isn't it?

05 12 08 16 CC Roger. And opposite omni.

05 12 08 58 CMP Hello, Houston to Apollo 7.

05 12 09 00 CC Houston. Go.

05 12 09 03 CMP Roger. Regarding the medicants and antibiotics and so forth, one of the reasons we don't have a temperature up here is that the thermometer is broken. We can't get it to go over 94, so we don't know if we've got a fever or not.

05 12 09 21 CC Roger. Understand.

0

05 12 10 39 CC Apollo 7, Houston.

05 12 10 42 CMP Roger. Go.

05 12 10 44 CC Roger. Be advised on your CMC power up. We'll update you a little later, but what we are going to try to do is to power it up over one station and then power it down over the other station, so we can take a look at some of the bits in there.

05 12 11 01 CMP Roger. Understand.

05 12 11 04 CC And we got a pretty good status of the other two guys' health. Can you give us kind of your rundown: health, medication, and sleep?

05 12 11 17 CMP Roger. I just woke up. I got a good solid 8 hours sleep, and Walt and Wally are both in the sack, and I don't know, I think they may have called in their medicine.

05 12 11 31 CC Yes, we have theirs, but we didn't get yours.

05 12 11 36 CMP Okay. At 132 hours, they each had two aspirins, and LMP recorded 15 clicks of water.

05 12 11 49 CC Roger.

05 12 11 51 CMP And I haven't had a drink yet, and I haven't taken any medicine lately.

05 12 11 58 CC Roger.

05 12 12 08 CMP Also, the commander had 20 clicks of water at 131 30.

05 12 12 12 CC Roger.

05 12 12 42 CC About 30 seconds LOS; Mercury at 41.

05 12 12 47 CMP Roger.

05 12 13 06 CC Apollo 7, Houston. You might try center position BIOMED.

05 12 13 14 CMP Center position of what?

05 12 13 16 CC BIOMED switch.

MERCURY (REV 84)

05 12 41 35 CC Apollo 7, Houston through Mercury.

05 12 41 40 CMP Roger.

05 12 41 43 CC Roger. Loud and clear, Donn.

05 12 41 45 CMP Okay.

05 12 41 49 CMP Ron, I've got a couple of comments here that's relevant to program 23 navigation ...

05 12 41 56 CC Roger. Go.

05 12 41 58 CMP Okay. The reason we knocked that off yesterday was that when we got into attitude at the right time and everything ... and the horizon and such in the sextant. The fixed line of sight was very indistinct. In fact, it was pretty hard to pick out anything that you could use. There was one line that might pass for a repeatable line, but it was pretty tenuous. Subsequent to that, I did a P52 AUTO optics check and found that the star was up there, but it was at a slightly different shaft and trunnion angle. That was the reason we didn't pick it up.

05 12 42 35 CC Roger.

05 12 42 37      CMP      So the gist of it all was that I don't think it was too worthwhile or realistic a way to perform that program, or it wasn't designed to be used that way, so I suggest that if we have any time or fuel later in the flight, we try to use the lunar landmarks and stars.

05 12 42 56      CC      Roger.

05 12 45 02      CMP      Houston, Apollo 7.

05 12 45 04      CC      Houston. Go.

05 12 45 06      CMP      Roger. You were making some comments awhile ago regarding power up and power down on the computer.

05 12 45 11      CC      Roger.

05 12 45 13      CMP      When did you want to do that? Are you talking about the normal power up for the next sequence of activity?

05 12 45 22      CC      Negative. The CMC update is about 135 hours, somewhere around there.

05 12 45 27      CMP      Oh, yes. Okay.

05 12 46 12      CMP      We could do it now and power down over the Canaries.

05 12 46 18      CC      Roger. Stand by.

05 12 46 37      CC      Roger. Donn, you can go ahead and power it up now. We'll power it up over Guam and then power down over Redstone.

05 12 46 44      CMP      Okay.

05 12 46 55      CMP      Well, that's cute.

05 12 47 10      CMP      We got a restart light.

05 12 47 20      CC      Roger. That's normal.

05 12 52 43      CC      Apollo 7, Houston. One minute to LOS; Redstone  
at 13.

05 12 52 50      CMP      Roger.

05 12 52 52      CC      And you passed the halfway mark while you were  
asleep there.

05 12 52 55      CMP      Yes, that's great. Do you want me to power down  
the computer now or wait?

05 12 52 59      CC      Negative. Let's wait until we get to Redstone.

05 12 53 03      CMP      Okay. I'll just let it simmer.

05 12 53 05      CC      Roger.

REDSTONE (REV 84)

05 13 14 10      CC      Apollo 7, Houston through Redstone.

05 13 14 15      CMP      Roger, Houston.

05 13 14 17      CC      Roger. Loud and clear.

05 13 14 33      CC      Apollo 7, Houston. You can power down anytime  
on the CMC and just prior to LOS, sometime in  
there.

05 13 14 41      CMP      Okay.

05 13 17 52      CC      Apollo 7, Houston. Opposite omni.

05 13 17 55      CMP      Roger.

05 13 19 22      CC      Apollo 7, Houston.

05 13 19 28      CMP      Roger, Houston. Go.

05 13 19 30      CC      Roger. Looks like your back pressure valve is  
open now. Would you manually close the back  
pressure control valve?

05 13 19 42 CMP Roger. Close it.

05 13 19 43 CC Wait 15 minutes; then reservice it and leave it off the line.

05 13 19 51 CMP Okay.

05 13 20 05 CMP Would you log me 30 clicks on the water gun and two aspirins, please?

05 13 20 15 CC Missed the clicks. Say again.

05 13 20 20 CMP Thirty clicks on the water gun and two aspirins.

05 13 20 22 CC Roger.

05 14 47 15 CC Apollo 7, Houston.

05 14 47 18 CMP Hello dere.

05 14 47 22 CC Roger. This is Captain Moho from deep in the trenches of the MOCR. I've got a block data update for you, Donn.

05 14 47 31 CMP Okay. Sure. (Laughter).

05 14 47 40 CC I'm a big TV fan of yours now, Donn.

05 14 47 43 CMP Say again.

05 14 47 44 CC I say I'm a big TV fan of yours. I even had my wife wake me up this morning to watch it.

05 14 47 49 CMP Oh, is that right? Well, go ahead with your update, trench man.

05 14 47 55 CC Roger. 087 dash 2 Alfa plus 266 minus 0270  
136 29 19 3483, 088 dash 1 Bravo plus 230 minus  
0600 137 54 53 3591, 089 dash 1 Alfa plus 292  
minus 0622 139 30 06 3430, 090 1 Bravo plus 314  
minus 0620 141 06 07 3386, 091 dash 1 Alfa plus

291 minus 0622 142 42 26 3541, 092 dash 1 Alfa plus 224 minus 0630 144 16 25 3073. Standing by for readback.

05 14 50 37      CMP      Okay. 087 dash 2 Alfa plus 266 minus 0270 136 29 19 3483, 088 dash 1 Bravo plus 200 minus - is that 20 or 230?

05 14 50 59      CC      Plus 230.

05 14 51 06      CMP      Roger. Can't read my own writing. Plus 230 minus 0600 137 54 53 3591, 089 dash 1 Alfa plus 292 minus 0622 139 30 06 3430, 090 dash 1 Bravo plus 314 minus 0620 141 06 07 3386, 091 dash 1 Alfa plus 291 minus 0622 142 42 26 3541, 092 dash 1 Alfa plus 224 minus 0630 144 16 25 3073.

05 14 51 58      CC      Readback is correct.

05 14 52 01      CMP      Okay. Could you give me a map update and also a star chart update?

05 14 52 06      CC      Roger. Stand by.

05 14 53 01      CC      Apollo 7, Houston. I have the map and star chart updates.

05 14 53 05      CMP      Roger. Go ahead.

05 14 53 07      CC      REV 85 nodal crossing 133 plus 39 plus 58, 33.0 west. For the map, right ascension is 414.

05 14 53 37      CMP      Roger. Understand. Say again the ... right ascension.

05 14 53 42      CC      414.

05 14 53 46      CMP      Roger. I got you. Thank you.

05 14 53 49 CC Okay.

05 14 54 30 CC Apollo 7, Houston. Opposite omni, please.

05 14 54 34 CMP Roger.

05 14 55 16 CC Apollo 7, Houston. One minute LOS Redstone;  
Canaries at 17.

05 14 55 23 CMP Okay.

CANARY (REV 86)

05 15 17 48 CC Apollo 7, Houston through Canary.

05 15 17 52 CMP Roger.

05 15 17 54 CC Say, Donn, I have rather extensive explanation  
regarding this landmark tracking. I'd like to  
start passing it up. It's a lot of verbiage, but  
I don't know how else to do it.

05 15 18 11 CMP Okay. Stand by.

05 15 18 23 CMP Go ahead, Bill.

05 15 18 26 CC Right. I guess when I get through here, all the  
talk is going to result in about only two changes  
in the procedure. I would like to go through it  
so you get an idea of the thinking that has been  
going here.

05 15 19 46 CMP Okay. Go ahead.

05 15 19 47 CC All right. First point: tomorrow, we will per-  
form landmark tracking on the three revs scheduled  
in the flight plan, that is, on 90, 91, and 92.  
And second point: on yesterday's or today's - it  
depends on how you look at it - landmark tracking,

the following problem resulted in AUTO optics not acquiring on all three landmarks; or to say another way, this is the reason AUTO optics didn't work. The trunnion will not drive until the computed trunnion is less than 38 degrees. The shaft is driving at this time which gives the impression that it is acquiring. And apparently, you started out with zero optics, and with zero optics when the less than 38-degree trunnion occurs, the optics have then approximately 38 degrees to drive in trunnion to acquire the landmark. Now, this 38 degrees plus a possible overshoot results in the thing hunting ground and the AUTO optics not acquiring.

05 15 20 22

CMP

Okay. Bill, I know all that. What happened yesterday is that it never came out of zeros that I could tell. Even when the target got within the 38 degrees, it did not appear to drive. Also, on one of the landmarks, it was beyond the 38-degree limit the whole time. It was way off to one side.

05 15 20 41

CC

Roger. Okay. I was afraid of that.

05 15 20 46

CMP

You see, I don't know all about how it is supposed to work. It didn't because the one landmark - in fact, on two of them, it was beyond the field of view.

O 05 15 20 58 CC On two of them, it was beyond the field of view?

05 15 21 00 CMP I know what happened. It never moved off center even when it got within 38 degrees. Right now, it is supposed to drive out and pick it up when you get within 38 degrees of it.

05 15 21 12 CC Okay. I got the picture. Two of the landmarks given to you were actually beyond the limits. And one of them, even after you got it within the 38 degrees, never went off the stops in trunnion.

05 15 21 26 CMP Well, that's what it appeared to me; yes.

05 15 21 28 CC Okay. Thank you. Sorry; I didn't mean to belabor that point.

O 05 15 21 32 CMP No, that's okay. I understand what you mean. My point about it not working: it doesn't do you any good. I guess that is the point.

05 15 21 40 CC Okay. If it doesn't work, this procedure I was getting ready to go through is not going to be any good either. But let me stand by and take another look at this before I occupy your time.

05 15 21 51 CMP That's okay. Go ahead and read it up first.

05 15 21 56 CC Okay. They - the net point was the first landmark may have been too far out of plane. Apparently, that's correct from what you said. On the second landmark, you may not have waited until the less than the 38-degree constraint was met before starting. Apparently, this is the time it wouldn't come off zero.

05 15 22 20      CMP      Now, wait a minute. That's not true. I waited until Walt said he saw the thing out the window, and then I went for it manually. By that time, it was almost up to the center of the ... or well within the 38 degrees, and I did attempt to get on it and track it, but it was so close to center by then the optics couldn't keep up on it.

05 15 22 40      CC      Okay.

05 15 22 41      CMP      It never did drive out there automatically to pick it up?

05 15 22 43      CC      Roger. That's the point.

05 15 22 44      CMP      ... zero and the shaft rolled around.

05 15 22 46      CC      Okay. Well, that's the point you were just making then. Okay. On the - on the third landmark, you keyed in a plus sign on the latitude. I don't know what that means, other than maybe there was a wrong algebraic sign.

05 15 23 00      CMP      Okay. That was my goof. That was also beyond the field of view, and AISO had to go over and work manually, and it was still - -

05 15 23 08      CC      Okay. That was another one that was beyond - -

05 15 23 09      CMP      I was looking out the side window on that one, also.

05 15 23 12      CC      Okay. Thank you.

05 15 23 15      CMP      What I thought was when they - apparently when these guys say in the south, they really mean

south, which means we've got to roll maybe 15 - 20 degrees even to see it, which is a little bit far because that puts it way out in a strange oblique angle.

05 15 23 29

CC

Right. Okay. One more item. The following changes to procedures should result in successful AUTO optics. A is - I am sure you're already doing this, Donn, but I am going to go through it anyway. To provide earlier acquisition time, revise step 5 in the procedure, which I doubt you are even using, to get the spacecraft equal to 10 degrees versus 23 degrees. And I think from what you said down at the Cape, you were using 10 degrees.

05 15 24 02

CMP

That's what we have been using all along; yes.

05 15 24 04

CC

I didn't change the checklist, and that is my goof. Okay. And also - I guess the point that is a little bit different here - I hadn't - I didn't know about it. When you call up - before you call up P22 manually, let me get this. Call P22, execute procedure through onboard checklist except manually position shaft zero, trunnion 35 degrees prior to ENTER.

05 15 24 34

CMP

Stand by.

05 15 24 42

CC

Apollo 7, Houston. We are coming up on LOS; we'll pick you up at - S-band volume up at Honeysuckle.

05 15 24 54 CMP Okay.  
REDSTONE (REV 86)

05 16 21 01 CC Apollo 7, Houston.

05 16 21 14 CC Apollo 7, Houston through Redstone.

05 16 21 31 CC Apollo 7, Houston through Redstone.

05 16 21 35 CMP Roger. Houston, Apollo 7.

05 16 21 38 CC We'll try to carry on with this, finish up the little blurb I have here on landmark tracking.

05 16 21 47 CMP Okay. Go ahead.

05 16 21 48 CC Okay. This involves a suggested change in the procedure. At step 6 in the checklist, which is the perform AUTO optics position code, code 11 - and it is a suggested change prior to the ENTER following that code 11 - the idea is that after this step 6, before you hit the ENTER button, manually position shaft zero, trunnion 35 degrees, trunnion 35 degrees.

05 16 22 35 CMP Okay. They need to put it in CMC?

05 16 22 38 CC Yes, affirmative. That's correct, and then optics mode to CMC and then ENTER.

05 16 22 46 CMP Okay. I think I see what you're driving at.

05 16 22 48 CC Right.

05 16 22 49 CMP Do it that way.

05 16 22 50 CC Roger. It sets the trunnion to a better initial value to minimize the AUTO optics acquisition time.

05 16 22 58 CMP Okay.

05 16 23 00 CC Let's see. Couple more items here. If unable to acquire target, then track unknown landmarks such as coastlines, clouds, et cetera.

05 16 23 15 CMP Roger. That's a good deal.

05 16 23 18 CC After landmark tracking, we want to perform a sextant star observation with approximately 35-degree line of sight to the sun. The scanning telescope test data correlates well with what was predicted, and we are satisfied with that data. After this test, the star count test will be closed.

05 16 23 47 CMP Roger. Say again. You want to do what now?

05 16 23 50 CC After landmark tracking, we want to perform a sextant star observation with approximately 35-degree line of sight to the sun.

05 16 24 03 CMP Oh, I see what you mean. Okay.

05 16 24 07 CC We will update that in the flight plan. By the way, that flight plan update I'll start over Antigua.

05 16 24 16 CMP Roger.

05 16 24 17 CC One final item. We are considering star lunar horizon sightings for later in the flight.

05 16 24 25 CMP Roger. You better make it pretty soon. That sun is going lower each day. It's receding toward the east, and there isn't much left now - much space between it and the sun, I mean.

05 16 24 35 CC Roger. Okay.

05 16 24 38 CMP I was thinking perhaps - Bill, are you still there?

05 16 24 41 CC Roger. Go.

05 16 24 43 CMP After the last landmark pass, on that night pass, following that, if we perhaps could do the sextant check then sextant - I mean, the lunar landmark set check.

05 16 24 58 CC We'll take a look at that. Sounds like a good idea.

05 16 25 01 CMP Bill, I've been watching it come up, and it's in a good position. I can use any one of about three stars, plus I think I can either get a landmark or the lunar - or the limb of the moon, either one. But it's receding toward the east, and if we wait another day or two, I'm afraid we're not going to have any nighttime left with the moon up.

05 16 25 19 CC Well, that's a good point. Were those three stars you mentioned, were those Apollo stars?

05 16 25 25 CMP Yes. There's Alpheratz and Procyon, and there's one other one - I'll have to look - Regulus, except it's a little too close.

05 16 25 34 CC Okay. Thank you.

05 16 25 38 CMP Oh, Denebola.

05 16 25 43 CC Donn, would you turn the O<sub>2</sub> tank 2 fans on for about 3 minutes?



05 16 41 20 CC Roger. We'll be starting on page 2 dash 48 at about 140 hours - and over there in the box where it says GO/NO-GO 106 dash 1 - the next item is state vector, and - let's see, we'll be passing that up at 142 43.

05 16 41 51 CMP Roger. That's your time tag?

05 16 41 53 CC That's the time tag, excuse me. That's correct.

05 16 42 00 CMP Okay.

05 16 42 01 CC And delete the reference to the W-matrix. And for the landmarks, we will have a T align of 141 plus 14.

05 16 42 24 CMP Roger. Understand. T align of 141 plus 14.

05 16 42 28 CC Affirmative. And at that time, you'll also get landmark ID updates.

05 16 42 35 CMP Okay.

05 16 42 38 CC On next page at 140 hours, all "Set up TV."

05 16 42 48 CMP Say again time.

05 16 42 49 CC 140 hours.

05 16 42 53 CMP Roger. Set up TV.

05 16 43 01 CC At 141 plus 12, add "TV ON." This is 2 minutes before Texas acquisition.

--- --- --- CMP Roger. TV on at 141 plus 2.

--- --- --- CC Affirmative. At 141 plus 30 add, "Fuel cell O<sub>2</sub> purge."

05 16 43 48 CMP Okay. Fuel cell purge at 30 for oxygen.

05 16 43 53 CC Affirmative. At 142 plus 35, replace the nine-by-nine with a three-by-three. On the P22 orbital NAV, there is a parenthetical insertion there, "nine-by-nine". Make that "three-by-three."

05 16 44 24 CMP I don't understand. We don't do that on board, do we?

05 16 44 29 CC Negative.

05 16 44 34 CMP I'll skip that -

05 16 44 35 CC Okay. Okay. Sorry. Okay. Now at 143 plus 40, add "State vector update, P52 permitting." What that means is they'll give you a state vector update, and, if it doesn't interfere with the P52, ...

05 16 45 08 CMP Okay. What time is this, 143 30?

05 16 45 12 CC 143 plus 40.

05 16 45 16 CMP Okay, Bill.

CANARY (REV 87)

05 16 45 20 CC And we need opposite omni.

05 16 45 48 CC You still reading me, Apollo 7?

05 16 45 54 CMP Roger. Go ahead.

05 16 45 55 CC Okay. I thought maybe we had lost you there. At 145 plus 20, "State vector update, P52 permitting", and again that means if it doesn't interfere with P52.

05 16 46 19 CMP Okay.

05 16 46 22 CC At 146 hours, replace that box over there, "Scanning telescope star count," and make that "Sextant star count."

05 16 46 43 CMP Okay.

05 16 46 46 CC Now, at 146 plus 40, we put a P23 in there for midcourse, and that's the one you were just talking about, I think. We just added that.

05 16 47 03 CMP Can you say that one again?

05 16 47 05 CC At 146 plus 35 or 40, somewhere right along in there.

05 16 47 14 CMP What are you going to do there?

05 16 47 16 CC P23 midcourse.

05 16 47 19 CMP Oh, okay.

05 16 47 21 CC We just stuck that in there in response to your remarks.

05 16 47 26 CMP All right.

05 16 47 31 CC We're coming up on LOS; I'll pick you up in Canary.

05 16 51 00 CC Apollo 7, Houston through Canary. How do you read?

05 16 51 05 CMP Loud and clear.

05 16 51 06 CC Very good. I'll continue on with this thing. At 147 hours in your flight plan, there is a telescope star count, and - with the sun line of sight and so forth. Just make that co-entry there a sextant star count, and that's it.

05 16 51 35      CMP      Okay.

05 16 51 43      CC      Okay. At 148 hours on the - on page 2 dash 51, 148 hours - G&N and also SCS power down.

05 16 51 58      CMP      Roger.

05 16 51 59      CC      Delete the entry down at 149 plus 30 hours where it says that G&N power down and SCS power down; just scratch through that.

05 16 52 13      CMP      Roger.

05 16 52 15      CC      And right above, at 149 plus 10, delete "P23 star horizon sightings."

05 16 52 27      CMP      Roger. Delete horizon sightings.

05 16 52 31      CC      Over on the next column, at 150 plus 05, H<sub>2</sub> heaters ON. And at -

05 16 52 52      CMP      Okay.

05 16 52 53      CC      - at 150 plus 25, "Fuel cell H<sub>2</sub> purge."

05 16 53 07      CMP      Got it.

05 16 53 11      CC      Okay. That's the end of the update. Have a relative listing of priorities which are probably well familiar to you, but I'll pass them on up anyway. In order of priority, most important first, the P22, a minimum of two successful revs and three landmarks each rev. The P52's, two of them during the night pass between the P22's; and then third and lowest priority, the sextant star count.

05 16 53 45      CMP      Roger. Got it.

05 16 53 46 CC Okay. That is the end of the update.

05 16 53 49 CMP Okay.

05 16 58 34 CC Apollo 7, Houston. Coming up LOS Canary; we'll have Carnarvon at 27.  
CARNARVON (REV 87)

05 17 27 11 CC Apollo 7, Houston through Carnarvon.

05 17 27 16 CMP Roger, Houston.

05 17 32 00 CC Apollo 7, Houston. LOS Carnarvon about 1 minute. You can turn your S-band volume up in about 3 minutes for Honeysuckle.

05 17 32 11 CMP Roger, Bill.  
HONEYSUCKLE (REV 87)

05 17 36 04 CC Apollo 7, Houston through Honeysuckle.

05 17 36 10 CMP Roger. Houston, Apollo 7.

05 17 36 31 CMP Houston, Apollo 7. Go.

05 17 36 33 CC Roger. I was just announcing acquisition Honeysuckle.

05 17 36 38 CMP Roger. Coming in fine this time.

05 17 36 41 CC Good. I'm reading you five-by, too.

05 17 37 02 CMP I just took some neat pictures over Australia. At least, I hope they turn out neat.

05 17 37 07 CC Good. Do you have the frame numbers or anything?

05 17 37 10 CMP Yes. Stand by. I'll get it squared away and bring it up for you.

05 17 37 13 CC Okay. How are you feeling today?

05 17 37 15 CMP Oh. pretty good.

05 17 37 18 CC Did you sleep pretty solid last night?

05 17 37 22 CMP Yes; sure did.

05 17 37 24 CC Good.

05 17 37 37 CMP Okay. These are frames 116 through 123.

05 17 37 43 CC 116 through 123.

05 17 37 46 CMP Roger. And the time was 137 hours 30 minutes through about 34 minutes.

05 17 37 54 CC Roger. 137 plus 30 through 137 plus 40.

05 17 38 00 CMP Negative. Thirty-four.

05 17 38 02 CC Thirty-four; I understand.

05 17 38 03 CMP About a 4-minute period there.

05 17 38 05 CC Roger. Understand. Four-minute period. How's the camera working?

05 17 38 17 CMP It's holding up real well.

05 17 38 19 CC Thought I heard Walt say something the other day about it not working right, or you were having some trouble with it.

05 17 38 25 CMP Well, we were, earlier in the flight. Seemed to be gummed up.

05 17 38 29 CC Good.

05 17 38 31 CMP But Wally took some - there was some old grease in there, real gummy stuff - he got that out of there. We put in a little light oil that we had in our medical kit, that nose cream.

05 17 38 42 CC Roger.

05 17 38 44      CMP      It's been working pretty well ever since.

05 17 39 28      CMP      Bill, log me another 20 clicks of water, please.

05 17 39 31      CC      Roger. Twenty clicks. Also, Donn, have a question regarding the - when you make a water dump, how - you know you reported that it affected the optics for a period of time, and a question: how long does it affect your ability to see through the optics when you make a dump?

05 17 40 03      CMP      Roger. Well, what happens is that anytime that you dump fluids ... they turn to ice crystals, and the sun reflects off of them, and it's millions of them out there. Usually during a water dump or urine dump - why, it will persist for - oh, 3 or 4 minutes anyway; in fact, sometimes longer than that.

05 17 40 25      CC      Roger.

05 17 40 26      CMP      Also ... know once in a while when you're driving the optics in shaft, you see little flakes of something come out on account of that. I don't know what the source of that reflection is.

05 17 40 38      CC      Okay. But from the time you first see this stuff - these crystals - it takes 3 or 4 minutes for them to disperse enough so that the optics are usable again. Is that a correct assumption?

05 17 40 48      CMP      At least that long. It may be longer than that. Usually what happens is you're either in complete darkness or complete daylight within that 3- or 4-minute period; so I really couldn't say if you were in deep space how long it would take for those to disperse.

05 17 41 02      CC      Okay.

05 17 41 04      CMP      I think the message is - say, on the translunar operation, you would not want to be dumping water anytime soon before your optics operations.

05 17 41 16      CC      Okay. I've got that copied down. Also, while I'm bugging you, I've got a question here from the medic. He wants to know if you coughed about 2 minutes ago.

05 17 41 31      CMP      (Laughter) Matter of fact, I did. I was drinking a drink of water, and there was some - gas came out of the water gun.

05 17 41 40      CC      Okay. And did you turn your head?

05 17 41 42      CMP      (Laughter) No, I did not.

   REDSTONE (REV 87)

05 17 56 00      CC      Apollo 7, Houston through Redstone.

05 17 56 07      CMP      Roger, Houston.

05 18 01 21      CC      Apollo 7, Houston. One minute LOS Redstone; MILA at 12.

05 18 01 28      CMP      Roger. Twelve for MILA.

## MILA (REV 88)

05 18 12 46 CC Apollo 7, Houston through MILA.  
05 18 12 54 CMP Roger. Houston, Apollo 7.  
05 18 12 57 CC Roger, Apollo 7. Request batt C voltage,  
please.  
05 18 13 18 CMP 36.0 amps.  
05 18 13 21 CC Would you say again, Donn?  
05 18 13 23 CMP 36.0.  
05 18 13 26 CC Roger. 36.0. Thank you.  
05 18 13 28 CMP Okay.

## ANTIGUA (REV 88)

05 18 20 42 CC Apollo 7, Houston. One minute LOS Antigua;  
Canaries at 25.  
05 18 20 48 CMP Roger. Understand. Canaries at 25.

## CANARY (REV 88)

05 18 25 33 CC Apollo 7, Houston through Canary.  
05 18 25 39 CMP Roger. Houston, Apollo 7.  
05 18 31 19 CC Apollo 7, Houston. One minute LOS Canary. We  
have about 1 more minute that we can use usually  
on the - through Madrid. I want to give you a  
call in about a minute and a half just to see  
if it's working.  
05 18 31 36 CMP Okay. Good.  
05 18 31 40 CC And you will need your S-band volume up.  
05 18 31 47 CMP Roger. S-band's up.

## MADRID (REV 88)

05 18 32 48 CC Apollo 7, Houston transmitting through Madrid.  
How do you read?

05 18 33 02 CT Madrid is air-to-ground.

05 18 33 09 CC Apollo 7, Houston. How do you read?

## CARNARVON (REV 88)

05 19 00 43 CC Apollo 7, Houston through Carnarvon.

05 19 00 47 CMP Roger. Houston, Apollo 7. Go.

05 19 00 51 CC Roger. Acquisition Carnarvon.

05 19 00 59 CMP Bill, I think I'm going to power up a little  
early and try to get P51 done on this night pass.

05 19 01 05 CC Okay. You're going ahead - you'll do it in  
about 10 minutes?

05 19 01 15 CMP Roger.

05 19 01 16 CC Okay.

05 19 01 18 CMP Calls for it at 30 minutes after the hour. Think  
I'll go ahead and do it now.

05 19 01 23 CC Okay. I'm changing my flight plan accordingly.

05 19 01 29 CMP Roger.

05 19 07 14 CC Apollo 7, Houston. Coming up on LOS Carnarvon;  
S-band volume up for Honeysuckle.

05 19 07 22 CMP Roger.

## HONEYSUCKLE (REV 88)

05 19 12 21 CC Apollo 7, Houston. Go.

05 19 12 31 CMP All right. Houston, Apollo 7. Go.

05 19 12 34 CC I'm sorry, Donn; I thought you called me.

05 19 12 37 CMP No. I'll give you an S-band here.  
05 19 12 40 CC Yes.  
05 19 15 08 CC Apollo 7, Houston. One minute LOS Honeysuckle;  
Texas at 41.  
05 19 15 15 CMP Roger.  
05 19 15 29 CC Apollo 7, Houston. We'll have a NAV vector for  
you at Texas.  
05 19 15 34 CMP Roger.

TEXAS through ANFIGUA (REV 88)

05 19 41 20 CC Apollo 7, Houston through Texas.  
05 19 41 25 CMP Roger. Houston, Apollo 7.  
05 19 41 28 CC Donn, I've got quite a bit of coolie work for  
you to do here: have a landmark update, a P27  
manual PAD, and a NAV vector to pass up when  
you're ready.  
05 19 41 42 CMP Okay. Stand by.  
05 19 41 48 CC Right.  
05 19 43 15 CMP Go ahead.  
05 19 43 21 CC Apollo 7, Houston. Let me know when you're  
ready to copy.  
05 19 43 25 CMP Okay. I'm ready. Which one you want first?  
05 19 43 29 CC Do you want to take the landmark first?  
05 19 43 33 CMP Okay. Just a minute.  
05 19 43 36 CC Well, if you have the other one, I'll go with  
it; I just didn't know which one you got.  
05 19 43 51 CMP Okay. I'll take the landmark.

05 19 43 53 CC light. The T align you already have, 141 plus 14. Okay. I'll give you the three landmarks. First ID is 8 slash south, GET is 142 plus 47, shaft 140, trunnion 300. Second ID is 37 slash north, GET of landmark 142 plus 54, shaft 490, trunnion 3 - I'll have to give you the trunnion on the second landmark in just a minute. I'm going on to the third landmark; ID is 209 slash south, GET 143 plus 09, shaft 100, trunnion 310.

05 19 45 21 CMP Roger. I don't understand the shaft angle. Is that in tenths of degrees or what?

05 19 45 27 CC It must be; let me check.

05 19 45 30 CMP Okay.

05 19 45 37 CC Donn, could we have ACCEPT, please? And we'll go ahead and send up that NAV vector.

05 19 45 42 CMP Roger. Got it.

05 19 45 49 CC Roger. Donn, you don't need those shaft and trunnion angles. I shouldn't have sent those up.

05 19 45 55 CMP That's okay. I like to have them.

05 19 45 58 CC But you're right; it's to one decimal place.

05 19 46 09 CC And the trunnion on the second landmark was 36.0.

05 19 46 14 CMP Roger.

TEXAS through ANTIGUA (REV 89)

05 19 46 17 CC Okay. I have a P27 update when you are ready to copy.

05 19 46 32 CMP Roger. Go ahead.

05 19 46 34 CC Roger. This will be for CSM NAV vector.  
VERB 71, 142 plus 43 plus 00, index 21, 01605  
00001 76332 41236 14021 22711 04330 14421 51621  
42274 71220 62676 11564 11455 06077 33520. I  
have a NAV check. NAV check, 142 13 0000 minus  
3070 plus 11887 1438. Standing by for readback.

05 19 48 50 CMP Roger. CSM VERB 71 142 43 00, index 21 01605  
four balls 1 76 332 41236 14021 22711 04330 14421  
51621 42274 71220 62676 11564 11455 06077 33520.  
NAV check 142 13 00 00 minus 3070 plus 11877 1438.

05 19 49 42 CC Readback is correct, and the computer is yours.

05 19 49 48 CMP This NAV check goes with this state vector, right?

05 19 49 51 CC Right. That's in case you need to fall back on  
it.

05 19 49 54 CMP Okay. Good point.

05 19 50 28 CMP Bill, - -

05 19 50 31 CC Yes.

05 19 50 32 CMP I don't understand this shaft angle up in sec-  
ond star. If the target's to the north, how  
can I have a shaft angle of 49 degrees?

05 19 50 40 CC Stand by. I'll check on it.

05 19 51 48 CC Apollo 7, Houston.

05 19 51 51 CMP Roger.

05 19 51 52 CC Hey, Donn, you're right. That should be 311,  
311 degrees. In other words, that was a minus  
49 there.

05 19 52 12 CMP Oh, I get it.

05 19 52 20 CMP Bill, I gather then these shaft and trunnion angles mean that with the zero roll angle, that's where the target will appear in the field of view.

05 19 52 27 CC That is my impression, and I'll get that straightened out, too.

05 19 52 31 CMP Roger.

05 19 52 32 CC Yes, I've been told that's correct.

05 19 52 34 CMP Okay. Fine.

05 19 52 46 CC Apollo 7, Houston - -

05 19 52 47 CMP I got a little roll right on that second one. Maybe we ought to pull it in a little closer.

05 19 52 53 CC I'm sorry, Donn; I cut you out. Say again, please.

05 19 52 57 CMP Roger. Disregard.

05 19 52 58 CC Right. Apollo 7, Houston. You have GO for 106 dash 1.

05 19 53 04 CMP Roger. Understand. GO for 106-1.

05 19 53 07 CC Roger.

VANGUARD (REV 89)

05 19 53 38 CC Apollo 7, Houston. Coming up on LOS; Canary at 59.

05 19 53 43 CMP Roger. Understand.

CANARY (REV 89)

05 19 59 33 CC Apollo 7, Houston through Canary.

05 19 59 37 CMP Roger.

05 20 02 18 CC Apollo 7, Houston. You're still in ACCEPT; you can go to BLOCK if you wish.

05 20 02 24 CMP Roger. BLOCK.

05 20 02 26 CC All right. Thank you.

05 20 03 24 CMP Houston, Apollo 7. Over.

05 20 03 26 CC Apollo 7, Houston. Go.

05 20 03 28 CMP Roger. Could you give me the rationale now for the sextant star count later on today? I don't understand why we're doing that.

05 20 03 39 CC Would you say again, please?

05 20 03 41 CMP The sextant star count scheduled at about 127 hours: I just wondered why we were doing it since we have already done the star count.

05 20 03 51 CC Stand by one.

05 20 03 55 CC Apollo 7, Houston. We'll get back with you on that one.

05 20 04 00 CMP Okay. Sextant in the daytime.

05 20 04 09 CC Apollo 7, Houston. Opposite omni.

05 20 04 11 CMP Okay.

05 20 05 27 CC Apollo 7, Houston. We're still not reading you. Would you select another omni for maximum strength, please?

05 20 05 34 CMP Roger. This is channel 4.

05 20 05 37 CC Right.

05 20 05 49 CC Apollo 7, Houston. Coming up LOS Canary; Carnarvon at 33.

05 20 05 55 CMP Roger.  
CARNARVON (REV 89)

05 20 34 05 CC Apollo 7, Houston through Carnarvon.

05 20 34 09 CMP Roger, Houston.

05 20 34 19 CC Donn, we'd like to get an open circuit battery check. It'll require pulling a circuit breaker here.

05 20 34 29 CMP Okay. Go ahead. What do you want?

05 20 34 31 CC Okay. First, we'd like to put the DC indicator switch to either MAIN A or MAIN B.

05 20 34 38 CMP Okay. It's on MAIN A.

05 20 34 40 CC Okay. And then on panel 5, we'd like to open the following circuit breaker: the batt relay bus batt A circuit breaker.

05 20 34 54 CMP Stand by.

05 20 35 06 CMP Roger. Batt relay bus batt A going open now.

05 20 35 10 CC Okay. And we're going to leave it open here to get some time data. We'll close it just before LOS Honeysuckle.

05 20 35 22 CMP Okay.

05 20 35 23 CC What we'll do is we'll repeat the following procedure for battery B over the States.

05 20 35 30 CMP Okay.

05 20 35 36 CC And, Donn, on the question you had on the sextant star count: what we had done before was the scanning telescope star count. This is little different; we get a 37-degree LOS with the sun.

05 20 35 55 CMP Roger. I understand. I thought the sextant count was to be used in case the telescope count didn't pan out, and since we did get - we did succeed in getting star counts on two lines of sight there, I don't understand why we have to do it again. I've already verified that you can see stars in the sextant in the daytime.

05 20 36 18 CC Okay. Stand by.

05 20 36 38 CC Donn, it's the line of sight that they feel that's important. We haven't done anything quite that close to the sun before.

05 20 36 54 CMP Roger. We'll discuss it and call you back later. That's eating into my sleep time for one thing, so I guess Walt can do it then.

05 20 37 00 CC Okay. This is the last test we're going to do on that, Donn.

05 20 37 05 CMP Okay.

05 20 38 01 CC And, Donn, could you place your O<sub>2</sub> tank 2 fans ON for 3 minutes then OFF?

05 20 38 09 CMP Roger. Two going ON.

05 20 39 51 LMP Houston, Apollo 7. Over.

05 20 39 53 CC Good morning, Walt.

05 20 39 58 LMP Roger. Morning reports seem to indicate that we're not leaking any more out in this cabin. Partial pressure O<sub>2</sub> is still 245 mm.

05 20 40 09 CC Roger. Copied that.

05 20 40 39 CC Apollo 7, Houston. We got about 1 minute LOS Carnarvon. You want to turn up your S-band volume for Honeysuckle.

05 20 40 48 LMP Roger.

HONEYSUCKLE (REV 89)

05 20 47 10 CC Apollo 7, Houston. You can close batt relay bus batt A circuit breaker now.

05 20 47 17 CDR Good morning, Jack.

05 20 47 19 CC Good morning, Wally. How are you this morning?

05 20 47 21 CDR Pretty good. Did we just go over Penny's home town?

05 20 47 25 CC Kind of looks that way.

05 20 47 27 CDR Yes, it was up loud and clear; sitting there it was very pretty.

05 20 47 31 CC Roger. Did you copy the closure of batt relay batt bus A circuit breaker?

05 20 47 35 CDR Yes, Walt's doing it now.

05 20 47 36 CC Okay. Real fine.

05 20 47 39 CDR We could see Sydney, Melbourne, Canberra; they really stood out clear as a bell in COAS over here.

05 20 47 45 CC Roger.

05 20 47 46 LMP At dark.

05 20 47 52 CDR We can even see the Southern Cross at this time, so Penny can feel pretty good about the flag up in her office.

05 20 47 58 CC Roger.

05 20 48 43 LMP Jack, do you have a map update handy?

05 20 48 46 CC They are in work.

05 20 49 08 CC Okay. Walt, here is your map update.

05 20 49 14 LMP Standing by.

05 20 49 15 CC Okay. For REV 89, a GET of the node is 141 03  
55, longitude 146.7 degrees west. We are pretty  
close to LOS Honeysuckle; pick you up at the  
Huntsville at -  
HUNTSVILLE (REV 89)

05 21 09 46 CC Apollo 7, Houston through the Huntsville.  
GUAYMAS through BERMUDA (REV 89)

05 21 11 59 CC Apollo 7, Houston through Guaymas.

05 21 12 02 CDR Roger. Loud and clear, Jack.

05 21 12 07 CC You're loud and clear. Could I verify that the  
O<sub>2</sub> tank 2 fans are OFF now?

05 21 12 13 CDR We'll check it.

05 21 12 23 LMP Give us a call, Jack, when you pick up the  
picture, will you?

05 21 12 26 CC Will do, Walt; and what we would like to do is  
get an open circuit check on battery B now, and  
while we're going across the States now here,  
could we put the DC indicator switch at MAIN A  
or MAIN B and then pull the batt relay bus batt  
B circuit breaker?

05 21 13 13 LMP I pulled the circuit breaker in battery bus B  
batt relay bus.

05 21 13 17 CC Okay. Fine, Walt. We'll give it about 10 minutes, and I'll ask you to close it.

05 21 13 22 LMP Okay.

05 21 14 19 CC We've got the picture now, Walt.

05 21 14 23 CDR Roger. Good morning. We are with you today while passing over the States to give you our daily ritual.

05 21 14 35 CDR Walt, would you please go over and dolly up the camera? I wonder what time it is.

05 21 14 50 LMP I'll call up the computer clock time and take a look.

05 21 14 56 CC Okay. The picture isn't the best right at this time, Wally.

05 21 15 00 CDR This is where we stand, and you'll note it's just about the time or below time - I'm not sure which way you look at it - but we have our situation completely solved. We now know what our orientation is. Now, if you'll pass me the camera, I'll continue the tour of the cockpit for the good people.

05 21 15 25 CC Apollo 7, Houston. Opposite omni.

05 21 15 33 CDR We are showing the camera now in ALC OUT. That is a new picture of the camera crew today. They're looking into the commander's seat over to the number 1 window. And you see the sun just starting to come into the window, and it

gives out a bright glare, and you may notice there is some of the collection of deposit on the window as I zoom slowly. This window has given us some trouble in that it is near our dump system, and it caught quite a bit of debris on it. Next to the window is the optical site that we use for accurate alignment through the window. We come over to the number 2 window with the markings on it. These markings are used to orient the spacecraft if we have no other guidance system available, and it gives us the pitch angle in relation to the visible horizon of the earth. And it has numbers such as 05, 10, 15, 20, 25, 30, and a line at the top which is our retro attitude, the attitude we're in to decelerate the spacecraft out of earth orbit. Coming over to the center, or the hatch window, we have some lines that were added to it to give us attitude reference for reentry. The lines describe a 55-degree bank to the left, a 55-degree bank to the right, and two 90-degree banks either left or right.

05 21 17 18	CC	Apollo 7, Houston. That's a good picture of the hatch window. We can clearly see the lines.
05 21 17 58	CC	Apollo 7, Houston.
05 21 18 07	CC	Apollo 7, Houston. We're losing your voice description.

05 21 18 33 CDR Okay. Walt, why don't you take the camera back, and you can show us the overhead section above the couches.

05 21 18 39 CC Okay. Wally, we've got your voice back now.

05 21 18 43 CDR Roger.

05 21 18 44 LMP How's the picture, Jack?

05 21 18 45 CC The picture is very good, very good.

05 21 18 47 CDR What I had shown you there were the two windows, the commander's reference window for pitch attitude and the center hatch window for bank attitude for reentry if we lose other guidance systems.

05 21 18 59 CC Roger. We copy the center window.

05 21 19 22 LMP For the LMP, this is where he sleeps. It's also where the command module pilot sleeps during his sleep cycle. Under the couch, we can see that there is absolutely no space left available. We have a suit stowage bag which is now stuffed completely full with three suits. These suits came off about 6 hours into the flight, and we've been very comfortable ever since. Passing back to the commander, he will describe the other couch for us.

GUAYMAS through BERMUDA (REV 90)

05 21 20 01 CDR This area here is the area under the command pilot couch, and we're showing the stowage of

some of our loose equipment. The large long bag is the temporary stowage bag. At the far end is the helmets bag where we have our helmets stowed for the duration of the flight till we don our suits at the end. And at this point, Donn is frisking a sleep station bag. It looks like a normal camper's sleeping bag as it comes toward the lens.

05 21 20 36 LMP That is affixed to the overhead structure that you see now - -

05 21 20 43 CC Apollo 7, opposite omni.

04 21 20 44 CDR - - is a spring system to secure it.

05 21 20 51 CDR When this is properly secured, we have the sleeping bags restrained, and we, in essence, are not in contact with any area of the spacecraft but the bag itself.

05 21 21 10 CDR Donn Eisele's had a rather hard day, so we'll let him turn in early and give you an idea of what the sleep station looks like with one of the crew in it.

05 21 21 23 LMP One of the things to get used to up here was sleeping in a position when you are completely free floating.

05 21 21 42 CDR At this particular point, you can see some of the sunlight coming in. We find that when we get as tired as we are at the end of the day

here, we will cover our heads with the sleeping bag material, and the sunlight does not affect us.

05 21 22 00 CDR Houston, are you still reading?

05 21 22 02 CC Roger. Five-by, Wally.

05 21 22 08 LMP At the far end of the stowage above the couches here, we have the helmet bags stowed for the commander on his side, and the lunar module pilot on his side, in the temporary stowage bag. You are looking here at two of the six umbilical hoses running from the environmental control system to the suits when the suits are on and to provide circulation when the suits are off. The hose on your right is the cold air hose bringing cold air into the suit, and the one with the screen - on your left - is the return hose from the suit. It is used also to clean the air with that screen when it's off the suit.

05 21 23 09 CC Roger. Walt, we've lost the picture now.

05 21 23 14 LMP Roger.

05 21 23 16 CC You want to try opposite omni?

05 21 23 18 LMP Okay. No more picture?

05 21 23 24 CC It's coming back.

05 21 23 25 LMP Okay. We have the Hasselblad camera being held by Wally Schirra now. Whoops, he let go of it. Did you see that, Jack?

0 05 21 23 40 CC Roger. We copied that.

05 21 23 51 CC A real good demonstration of zero g.

05 21 23 58 LMP And we might add for everybody's benefit, coming up later on in these flights, that there should be absolutely no problems with getting around in zero g as long as you're out of those suits. The work done is almost zero, and you can move any place you want to very freely, and you certainly don't need strong handholds to take care of it. And you can generally jam your feet - you find you end up using your feet an awful lot more than you do in 1 g, kind of like a monkey moving around in his cage. He just took our picture. How's it going, Jack?

0 05 21 24 36 CC It's going real fine. We're kind of locked up on a midframe here, but we're getting a good recording of this.

05 21 24 49 LMP Okay. Here is a pencil demonstration. Notice how Wally can control that pen just with his breath. He could blow on me and probably do the same thing.

05 21 25 16 CC Roger. Saw that, Wally.

05 21 25 20 LMP Okay. We have the 16mm camera sitting back on the wall there just above my head.

05 21 25 32 CDR This camera, too, has the wide-angle lens, and we'll have some color movies of some of our

0

home activities, as we've already labeled the movies, naturally, our home movies.

05 21 25 49 CC We're just about to lose it now, Wally.

05 21 25 51 CDR Roger. And we do remember to remove the lens cap, as I just did.

05 21 25 54 CC Roger.

05 21 25 56 LMP And when we take pictures out the window, we always focus at infinity.

05 21 26 02 CC Roger. We've lost the picture now. Could we get you to close that batt relay bus batt B circuit breaker?

05 21 26 10 LMP Roger. It's in work.

05 21 26 13 LMP TV camera going off.

05 21 26 15 CC Walt, why don't you leave that circuit breaker open through Canary, and we'll close it at Canary.

05 21 26 19 LMP You want to see it go closed?

05 21 26 24 LMP Okay.

05 21 26 25 CC Leave the batt relay bus batt B circuit breaker open, and we'll close it just LOS Canary.

05 21 26 30 LMP Okay. TV camera going off.

05 21 26 32 CC Roger.

05 21 26 33 CDR Jack, you understand how our arrow works now?

05 21 26 38 CC Say again, Wally.

05 21 26 40 CDR You understand how our UP arrow works now? We're not sure ourselves.

05 21 26 50 CDR Did that arrow on the aft bulkhead show up?

04 21 26 53 CC No, we didn't see the arrow on the aft bulkhead.

05 21 26 56 CDR Well, it blew the whole bit.

05 21 27 00 CC We could see the lines on the hatch window very clearly, but not the lines on the rendezvous window.

05 21 27 08 CDR I see; very good.

05 21 27 13 CDR We - - Did you see the debris on my number 1 window?

05 21 27 17 CC No, we couldn't make that out, and we lost your voice just about the time you were describing the - just after you started the description of the hatch window lines.

05 21 27 28 CDR I see.

05 21 28 15 CC 7, we are 1 minute LOS Bermuda; Canaries at 141 plus 33.

05 21 28 22 CDR Roger.

CANARY (REV 90)

05 21 33 43 CC Apollo 7, Houston through the Canaries.

05 21 33 47 CDR Roger. Loud and clear.

05 21 33 50 CC Roger. I have some targets of opportunity that you can add to your synoptic training photography list.

05 21 34 04 CDR Okay. Jack, you want to give it to me by time; is that what you're going to do?

05 21 34 09 CC Stand by one, Wally; we've got a loud tone here.

○ 05 21 34 16 CDR Tell him he can take the day off.

05 21 34 24 CC Apollo 7, Houston. Are you reading now?

05 21 34 28 CDR We read you loud and clear.

05 21 34 29 CC Okay. We had a loud tone there which cleared itself up. There are five targets of opportunity which you can add to your training photography.

05 21 34 41 CDR Okay. How are you blocking those, by time?

05 21 34 45 CC No. We're just giving you the targets, and then just letting you use your own judgement - fuel wise and everything - to photograph them when you come over.

○ 05 21 34 57 CDR Right. If you can give me a time hack, I can put them on the flight plan; it's faster.

05 21 35 02 CC Okay. Stand by.

05 21 35 16 CC Wally, we may not get back to you with the GET of all five targets before Canaries then. We'll pick you up at Tananarive at -

05 21 35 24 CDR - just give me the targets; we'll straighten it out later.

05 21 35 26 CC Okay. We have Tananarive at 141 plus 52.

05 21 35 32 CDR Okay.

05 21 35 45 CDR Houston, Apollo 7.

05 21 35 47 CC Go ahead, 7.

○ 05 21 35 48 CDR Roger. Give me the five targets, and we can go ahead and look them up ourselves.

05 21 35 51 CC Okay.

05 21 36 00 CC Okay. Wally, number 1 is the volcano in the Galapagos Islands.

05 21 36 06 CDR Galapagos. Okay.

05 21 36 08 CC Number 2 is the Kilauea volcano in Hawaii.

05 21 36 17 CC And number 3 is the Taal volcano in Luzon, in the Philippine Islands.

05 21 36 25 CDR Okay. I got that.

05 21 36 28 CC And number 4 is Mt. Areno in Costa Rica, and the lat is 9 degrees north, longitude 84 degrees west.

05 21 36 44 CDR Standing by for nine north, 84 west. Roger.

05 21 36 46 CC And number 5 is Fort Bliss area in El Paso.

05 21 36 56 CDR Roger. I think we got up to there yesterday.

05 21 37 00 CC Okay. And the number 3 - the Taal volcano in the Philippines - the lat is 14 degrees north, longitude 120 degrees east.

05 21 37 11 CDR One hundred and twenty. Roger. Okay. We're going to do that area today and do landmarks and all of that good stuff, so we may have a chance to rack in a little.

05 21 37 28 CC Roger.

05 21 37 34 CC And, Wally, we've got a sixth one they just handed me: Africa, between 10 degrees north, 25 degrees east to 15 degrees north, 25 degrees east.

05 21 37 49 CDR Okay.

05 21 37 56 CDR We've been hitting Africa pretty hard because that comes up, as you can see right now, in the daylight.

05 21 38 00 CC Okay. Fine. Could we get that batt relay bus batt B circuit breaker closed now?

05 21 38 10 LMP Done.

05 21 38 11 CDR Jack, what would help us is, if you can give us a lead in on this camera 15 to 20 minutes, we can pulse a little bit to stay near them.

05 21 38 23 CC Roger.

TANANARIVE (REV 90)

05 21 53 18 CC Apollo 7, Houston through Tananarive.

05 21 53 51 CC Apollo 7, Houston through Tananarive. Standing by.

05 21 53 57 CDR Roger.

05 21 58 24 CC Apollo 7, Houston. One minute LOS Tananarive; Carnarvon at 142 plus 08.

05 21 58 34 CDR Roger.

CARNARVON (REV 90)

05 22 10 15 CC Apollo 7, Houston through Carnarvon.

05 22 10 21 CDR Roger. Standing by.

05 22 10 23 CC Roger.

05 22 10 31 LMP How'd the show go over this morning?

05 22 10 34 CC Oh, the - we were locked on a midframe for about - oh, two-thirds of the way, or half the

way through, and we've got it on tape, and we are trying to replay it - to where it's not locked on a midframe.

05 22 10 57 CC We lost voice just about the time Wally just started describing the middle hatch there, and to where you picked it up right after that.

05 22 11 12 CC Walt, this landmark number 37: it's 78 miles north of ground track.

05 22 11 22 LMP Okay.

05 22 11 25 CC And could we get the BIOMED switch to CDR?

05 22 11 32 CDR Done.

05 22 11 43 CC Apollo 7. Opposite omni.

05 22 15 06 CC Apollo 7, Houston. One minute LOS Carnarvon. We pick up Honeysuckle here; do you want to turn your S-band volume up?

05 22 15 15 LMP Okay.

05 22 15 34 LMP Jack, log the LMP 10 clicks of water on the water gun, will you, please?

05 22 15 37 CC Roger. Will do.  
HONEYSUCKLE (REV 90)

05 22 20 48 CC Apollo 7, Houston. LOS Honeysuckle; Hawaii at 142 plus 35.

05 22 20 55 CDR Roger. Jack, we rode to the ... on that S-band. We're going to bring ...  
HAWAII (REV 90)

05 22 36 06 CC Apollo 7, Houston through Hawaii.

05 22 36 09 CDR Alpha.

05 22 36 12 CC Roger. Wally, you're coming through loud and clear.

05 22 36 17 CDR Good.

05 22 36 39 CMP Houston, Apollo 7.

05 22 36 41 CC Go ahead.

05 22 36 42 CMP Log the CMP 20 clicks on the water gun.

05 22 36 45 CC Will do. Hey, Donn, on this second landmark: this is going to be a fairly difficult one to acquire. You'll probably have to roll up about 30 degrees right to pick it up, and there's some cloud cover up there. We're saying near seven-tenths. If you do have any problems getting it, go ahead and acquire an unknown landmark and track that.

05 22 37 10 CMP You say the second one; that's Tyndall Air Base, right?

05 22 37 13 CC Yes, sir.

05 22 37 31 CMP Hey, Jack, it's very likely we won't get it, and this would be a good checkout of the unknown landmark. Up to here, I've already done a couple of those.

05 22 37 39 CC Okay. Understand.

HUNTSVILLE through ANTIGUA (REV 90)

05 22 43 05 CC Apollo 7, Houston.

05 22 43 15 CC Apollo 7, Houston.

0 05 22 43 59 CC Apollo 7, Houston.

05 22 44 03 CDR Loud and clear.

05 22 44 05 CC Roger. We have a small correction to the location of landmark 37, the second landmark.

05 22 44 15 CMP Go ahead.

05 22 44 16 CC Okay. That's 78 miles south - south of ground track, which means you are going to have to roll that -

05 22 44 27 CMP - what do you mean small - - That's 150 miles.

05 22 44 29 CC That's small - which means you are going to have to roll left, Donn, to get it.

05 22 44 42 CC I'm sorry about that.

05 22 44 45 CMP That's no sweat.

0 05 22 48 17 CMP Four marks in so far.

05 22 48 21 CC Apollo 7, Houston.

05 22 48 25 CDR We've got five marks in that first landmark.

05 22 48 27 CC Okay. Real fine, real fine. We have a - when we changed that 78 miles from north to south, that is going to change our shaft that you should be reading. Your shaft for the second landmark will be 049 degrees, same trunnion.

05 22 48 45 CDR Roger.

05 22 48 46 CMP Roger.

HUNTSVILLE through ANTIGUA (REV 91)

05 22 50 12 CMP Here come the updates. Are you reading these, Jack?

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05 22 50 18 CC Affirmative, Donn. We are copying them.

05 22 50 21 CMP Okay. I'll just go through them, then.

05 22 50 37 CDR Earth state vector is good at all marks or better.

05 22 50 42 CMP Or else it's not working.

05 22 50 43 CC Roger. Copy that.

05 22 50 45 CDR Roger.

05 22 51 09 CDR Boy, you can really tell who is burning fires  
down there today.

05 22 51 14 CC Roger, Wally.

05 22 51 15 CDR There is one place - there is a smoke curl of  
about 160 miles; it just obscures the whole area.

05 22 51 23 CC Copy that.

05 22 51 24 CDR The pollution boys ought to get up here one time.

05 22 51 43 CMP At 142 hours 51 minutes 34 seconds, Wally took a  
picture of the city with the large smoke - large  
smoke trail off of it. Magazine S, Frame ... zero.

05 22 51 53 CC Copy.

05 22 51 56 CDR Starting to roll left.

05 22 52 01 LMP Here is a target location update.

05 22 52 15 CMP What do you know, that point is under water.

05 22 52 41 CMP Jack, what is that trunnion angle and shaft  
angle for this target that I'm shooting?

05 22 52 50 CC The trunnion is going to be 049, and the shaft  
is going to be 03 - rather the shaft is going  
to be 049, trunnion 030.

05 22 53 01 CMP Okay. That's with the roll angle in?

05 22 53 09 CC Negative. That is not with the roll angle in.

05 22 53 11 CMP Okay. So we can subtract the roll angle a little there somewhat?

05 22 53 16 CC Affirmative.

05 22 53 27 CMP Magazine 8, pictures 127 to 130 were taken of Houston, and the area north of Dallas, and Dallas.

05 22 53 35 CC Roger.

05 22 53 41 CDR We are socked in right off the Gulf Coast.

05 22 53 55 CDR There is a hole - we might see Tyndall, but it's pretty poor pickings.

05 22 53 59 CC Roger.

05 22 54 15 CDR Jack, whereabouts is Gladys this morning?

05 22 54 20 CC Stand by. I'll get you lat/long.

05 22 54 28 CC Wally, it looks like it's just generally west of Fort Meyers.

05 22 54 32 CDR Yes. Walt has it right now. It's to the south of us.

05 22 54 38 CC Roger.

05 22 54 47 CMP Jack, next pass, if we don't have a landmark right around this same area, we can get a beautiful picture of that hurricane.

05 22 54 53 CC Okay. Sounds good.

05 22 54 57 CDR The weather is too bad to see Tyndall.

05 22 55 30 CMP Hey, Jack.

05 22 55 32 CC Go ahead.

05 22 55 37 CMP Apollo 7, Houston. Apollo 7.

05 22 55 41 CC Roger. Go ahead.

05 22 55 43 CMP Roger. Jack, that isn't enough time between landmarks.

05 22 55 45 CC Roger -

05 22 55 46 CMP I have to get my book to the next landmark, and checklist squared away, and load in new data, plus accept all the results of the first one. You just can't get it all done in 7 minutes.

05 22 55 56 CC Okay. I copy that, Donn.

05 22 55 58 CMP I didn't get an unknown mark either because it was just too late getting on the scope.

05 22 56 04 CDR We're trying to find out - and we - the best place to get practice landmarks is right here, JT.

05 22 56 11 CC Understand.

05 22 56 12 CDR OJT.

05 22 56 14 CC Roger. Understand.

05 22 56 17 CDR You understand we never did get landmark training with our simulator; it did not work.

05 22 56 20 CC Roger. I knew that.

05 22 58 54 CDR Houston, Apollo 7.

05 22 58 57 CC Apollo 7, Houston. Go.

05 22 59 02 CDR Roger. When I transmit the pulse to SELF COMMAND, it's much more difficult than it is in the simulator. I have to move the switch very rapidly to avoid a RATE COMMAND pulse.

05 22 59 12 CC Roger. Copy that. And, Wally, -

05 22 59 15 CDR That's the only anomaly I've seen in the system, other than the fact that the pulses are much smaller than they are in the simulator.

05 22 59 22 CC Okay. Copy that. We do have the information on the first landmark for that next P22 during the next rev, if you're ready to copy.

05 22 59 39 CDR I think he's using the book, Jack. You will have to hold.

05 22 59 41 CC Okay.

05 22 59 45 CDR Wait a minute; here he comes. Go ahead.

05 22 59 47 CC Okay. This will be landmark 18. It's north of ground track, 28 miles north. The GET is 144 plus 23. You'll have a shaft of 343 and a trunnion of 31.

05 23 00 20 CMP The 144 23 was the GET of landmark. Right?

05 23 00 24 CC Affirmative.

05 23 00 25 CMP How about landmark number, and give me the distance again?

05 23 00 28 CC Okay. It's landmark 18, 28 miles north of ground track.

05 23 00 39 CMP Landmark 18, 28 miles north, 144 plus 23, shaft rate 343, trunnion 31.

05 23 00 45 CC Roger.

05 23 00 57 CC We're trying to find a second one for you that gives you enough time in between sightings, and

if not, we'll give you - let you have an unknown landmark exercise.

05 23 01 08 CMP Okay.

05 23 01 42 CC And, Donn, on our second landmark for this next rev, we can't find a suitable landmark that is clear at this time.

05 23 01 53 CC So it's an unknown landmark exercise; it's your day.

05 23 01 58 LMP Okay. Fine. If there are too many clouds, I'll just use a cloud bank.

05 23 02 21 CC Real fine.

TANANARIVE (REV 91)

05 23 27 16 CC Apollo 7, Houston through Tananarive.

05 23 27 20 SC Roger. Loud and clear.

05 23 27 22 CC Roger. You're loud and clear also. How are the results of that third landmark, Donn?

05 23 27 28 CMP I got five marks on it and all the updates to the state vector Z coordinates, and it is now corrected at the landmark. I think it's rather significant for the computer to take ...

05 23 28 04 CC Donn, you started out real good, and then you faded out; we'll catch you over Carnarvon on that report. We copied that the update to the state vector were all zips.

05 23 31 58 CC Apollo 7, Houston.

05 23 32 00 CT Roger.

05 23 32 04 CC Roger. We're about 1 minute LOS Tananarive.  
We'll have ARIA on S-band at 143 plus 38 and  
Carnarvon about 4 minutes later.

05 23 32 16 SC Roger.  
ARIA 1 (REV 91)

05 23 37 44 CC ARIA 1, go REMOTE.

05 23 38 13 CC Apollo 7, Houston through ARIA.

05 23 38 16 CMP Roger. Loud and clear, Jack.

05 23 38 18 C3 Loud and clear, Donn.

05 23 38 32 CDR We have this band of data to be done.

05 23 38 39 CC Say again, Donn.

05 23 38 41 CDR This is Wally. What's the predicted path for  
Gladys?

05 23 38 46 CC Okay. Stand by. I'll have you a real good hack  
on that as we come up through Carnarvon here.

05 23 42 53 CDR Okay.  
CARNARVON (REV 91)

05 23 42 54 CC Apollo 7, Houston.

05 23 42 55 SC Loud and clear.

05 23 42 59 CC Roger. I have a couple of questions for Walt  
here.

05 23 43 04 LMP I'm listening.

05 23 43 06 CC Okay. The gurgling sound that we heard yesterday,  
Walt, when we were on AUTO 1 then: did you hear  
the same gurgling sound in AUTO 2?

○ 05 23 43 20 LMP It's come back at several different times, and it's also gone away. It seems to be associated with higher humidity time. AUTO 1 and AUTO 2 are both working on the cyclic accumulators.

05 23 43 31 CC Okay. Fine.

05 23 43 34 CDR We have a theory, Jack, that where we provide g on a burn, we start disturbing water that may be in the lines and get it started out of the pipes.

05 23 43 45 CC Okay. Copy that. You are still stroking manually a little bit, too?

05 23 43 54 LMP Yes, we hit it a couple of times. I'm not sure that had anything to do with clearing it up or anything. It seems to me it kind of runs its course, and it's occurred after burns every time.

⊖ 05 23 44 03 CC Okay. And then we had some garbled transmissions. We didn't get too much of the transmission when you reported a leak yesterday at the water panel. Did this occur when you were dumping waste water?

○ 05 23 44 20 LMP Every time we've dumped waste water, the place where the PUD attaches to the waste water panel is a - what do you call it - a suaged fitting, and there is no O-ring in it, and we tightened it up, and it leaked. I tightened it up again as much as I think we ought to on that small line with the wrench we have, and it still forms a big bubble every time you dump. You get a - oh, 4 or

5 ounces of water in the one big bubble right there on the waste water panel after you've finished dumping a waste water tank.

05 23 44 52 CC

Okay. Copy that.

05 23 44 54 CDR

Just to make the point clear, Jack, that same fitting is used as a GSE fitting on the spacecraft prep period at the Cape, and they used a voishant washer in there, but we can't do it that way. They're going to redesign that fitting for later flights or put a solid mount in.

05 23 45 14 CC

Okay. Real fine. Real good description here. And the other thing is I have - we've got another landmark on this next pass that is - allows you to do some unknown landmark tracking in between. We'd like to pass you some data on a second landmark for this next pass.

05 23 45 34 LMP

Okay. Go ahead.

05 23 45 39 CDR

Jack, on this next pass, we'd like to make a run on that hurricane instead of an unknown. We can get unknowns all around the world.

05 23 45 45 CC

Okay. We concur on that, Wally. We'd like for you to send up a state vector here at Carnarvon. Could you go to ACCEPT?

05 23 46 10 CDR

You've got it.

05 23 46 11 CC

Okay. Coming up.

05 23 46 14 CC

Okay. This landmark is number 225. It's 68 miles south of ground track.

○ 05 23 46 26 CDR Hold it; hold it. Donn's doing another thing here.

05 23 46 31 CDR All right. Start again, Jack. I'm sorry.

05 23 46 33 CC Okay. Landmark 225, 68 miles south of ground track, GET 144 plus 56, shaft 037, trunnion 033.

05 23 47 02 CDR Okay. Landmark 225, 68 miles south, 144 56 the time, 037 033 shaft and trunnion.

05 23 47 13 CC Okay. This will be a real marginal landmark since it's quite close to the terminator there.

05 23 47 24 CDR Okay.

05 23 47 26 CC Okay. And I'm ready with your NAV check PAD when you're ready to copy.

05 23 47 31 CDR All right. Stand by.

⊖ 05 23 47 32 LMP Go.

05 23 47 34 CC Okay. GET 143 47 0000 minus 26 13 plus 11802 1502.

05 23 48 00 LMP Roger. 143 47 four balls minus 26 13 plus 11802 1502.

05 23 48 09 CC Roger. And we're through with the computer.

05 23 48 28 CC And, Wally, would you like an update for the telescope for watching the hurricane, or do you intend to do that visually?

05 23 48 39 CDR Visually.

05 23 48 40 CC Okay. Copy.

05 23 48 55 CC Okay. Wally, the present position of the hurricane is about 100 miles due west of Tampa.

○

05 23 49 07 CDR Roger.

05 23 49 20 CC I'll give you part of the news. The front page headlines this morning on the mission says, "Big Storm Tracked by Apollo 7" and describes the spacecraft as a manned weather satellite.

05 23 49 34 CMP The witch is out finally.

05 23 49 38 CC We're about 1 minute LOS Carnarvon; we'll pick you up at Hawaii at 144 plus 07.

05 23 49 51 CDR One day we're COMSAT, and now we're NAV SAT.

05 23 49 54 CC Roger.

05 23 50 00 CDR Our Navy boys - they're just worried about being UNSAT.

## HAWAII (REV 91)

06 00 10 33 CC Apollo 7, Houston through Hawaii.

06 00 10 36 CDR Go ahead.

06 00 10 39 CC Apollo 7, Houston. I have your block 16 data,  
whenever you are ready to copy.

06 00 11 02 CDR Go ahead, Jack.

06 00 11 04 CC Okay. 093 dash 4 A (Able) plus 310 minus 1620  
146 plus 58 plus 14 3420, 094 dash 4 Able plus  
305 minus 1619 148 plus 34 plus 16 3452, 095  
dash 4 Able plus 257 minus 1630 150 plus 09  
plus 20 3350, 096 dash 3 Able plus 313 plus  
1339 151 plus 25 plus 41 3430, 097 dash 3 Able  
plus 299 plus 1339 153 plus 01 plus 35 3455,  
098 dash 3 Charlie plus 206 plus 1419 154 plus  
38 plus 44 3101. End.

06 00 13 47 IMP Roger. Readback follows: 093 dash 4 Able plus  
310 minus 1620 146 plus 58 plus 14 3420, 094  
dash 4 Able plus 305 minus 1619 148 plus  
34 16 3452, 095 dash 4 Able plus 257 minus  
1630 150 plus 09 plus 20 3350, 096 dash 3 Able  
plus 313 plus 1339 151 plus 25 plus 41 3430, 097  
dash 3 Able plus 299 plus 1339 153 plus 01 plus  
35 3455, 098 dash 3 Charlie plus 206 plus 1419  
154 plus 38 plus 44 3101. Over.

06 00 14 49 CC Roger. That is correct.

## HUNTSVILLE through BERMUDA (REV 91)

06 00 15 58 CT Huntsville AOS.  
06 00 17 22 CT Huntsville AOS.  
06 00 17 40 CT Huntsville AOS.  
06 00 21 35 LMP Hey, Jack, do you have much this pass because  
we're going to be pretty well tied up throwing  
cameras back and forth.  
06 00 21 41 CC Okay. Nothing except the morning news which I  
can read whenever you are able to --  
06 00 21 48 LMP We'll wait.  
06 00 21 49 CC Fine.

## HUNTSVILLE through BERMUDA (REV 92)

06 00 27 41 CC Apollo 7, Houston. Opposite omni. Could you  
tell us which one you will be on when you switch?  
06 00 27 47 CDR Able.  
06 00 27 49 CC Roger. Understand. Able.  
06 00 27 56 CDR Roger. We're coming into the eye.  
06 00 28 01 CC Say again, Wally.  
06 00 28 02 CDR We'll catch you near the eye of the hurricane.  
06 00 28 04 CC Okay. Real fine.  
06 00 28 06 CDR It will be south of us. Man, that's really a  
spinner.  
06 00 28 12 CC I copy.  
06 00 28 14 CDR It's really a very good definition here. It  
starts, and you can see the start of it right  
below us now. We're just going over the beginning  
of it. It's wide open to the west.

06 00 28 46 CDR It's a very spectacular view. The - there are a lot of broken clouds around the edges of it, but it tightens up in the center. A real tight vortex and a spotty few high cu - thunderstorms about 100 miles outward - 150 miles off the center. There is a wide blue area, and then it tightens up in the center and reaches a peak just like the thunderstorms we described in South America.

06 00 29 11 CC Roger. Copy that.

06 00 29 18 CDR Stand by for a mark. We are due south.

06 00 29 29 CDR Stand by.

06 00 29 30 CDR MARK.

06 00 29 37 CC Wally, was that the mark right over the eye?

06 00 29 40 CDR That's affirm. The eye is south of us about - oh, I'd say 200 miles, 150 miles.

06 00 29 46 CC Okay.

06 00 30 12 CDR Jack, on that run, we ran the 16mm movie camera at 1 frame per second for a strip back from the west coast, LA through the hurricane. We ran the Panatomic film with red and green filters from the west coast through El Paso. We ran the S0121 from El Paso through the hurricane, including Houston. The chief landmark tracking on El Paso - I'll have Donn fill you on that.

06 00 30 43 CC Okay. Real fine, Wally.

06 00 30 45 CDR Other than that, we are doing nothing.

○ 06 00 30 49 CMP You should have seen it up here; it looked like squirrels in a cage.

06 00 30 52 CC Roger.

06 00 30 54 CMP Log this, Jack. Frame 142 is where we completed taking pictures of the hurricane at this time. I can't quite read - the MET here at 31, and just prior to that, we took three or four shots of the Houston area, which is wide open, the whole area down there.

06 00 31 17 CDR Clear Lake stood out like a bell.

06 00 31 21 CC Okay. Copy that.

06 00 31 23 CMP Magazine F.

06 00 31 25 CDR That's been one of our best passes today.

⊖ 06 00 31 30 CMP It almost made us homesick.

06 00 31 33 CC Roger.

06 00 31 34 CDR We plan to drop in in a few days.

06 00 31 40 CC Roger. Understand.

06 00 31 44 CMP Jack, I ended doing an unknown landmark. The AUTO optics brought it in the sextant, but it was moving so fast, I got behind it, and never did get a mark on the runway. It was a pistol, though. You really got to get on it in a hurry because it is whistling by, so I ended up taking a little spot out in the desert and did an unknown landmark instead.

○ 06 00 32 07 CC Okay. Copy that, Donn.

06 00 32 12 CMP Incidentally, the tracking pass itself, in general, is fairly simple to do if you get on it fast enough. The - I guess the hard part for me is in the procedural aspects of flipping switches and going through the program; meanwhile, the target is whistling by.

06 00 34 32 CC Apollo 7, Houston.

06 00 34 34 CDR Go ahead.

06 00 34 35 CC Roger. We would like you to switch to the secondary tanks in quad Charlie; give us a mark when you do it.

06 00 34 47 CDR You want the main OFF first or the secondary on first?

06 00 34 51 CC Secondary on first.

06 00 34 53 CDR Roger. Stand by.

06 00 34 55 CDR MARK.

06 00 34 56 CDR Charlie ON.

06 00 34 57 CDR Primary Charlie is coming off.

06 00 34 59 CDR MARK.

06 00 35 02 CC Okay. We are about to lose you over Bermuda here; we will pick you up at Ascension at 144 plus 39.

06 00 35 09 CDR Roger.

06 00 36 18 CC Apollo 7, Houston.

06 00 36 20 CDR Go ahead.

06 00 36 21 CC Walt, did you put any high bit rate in the DSE this last rev?

06 00 36 27 IMP That's affirm.

06 00 36 28 CC Roger. Copy.

06 00 36 29 CDR We put it on when Donn was getting his state vector updates in.

06 00 36 34 CC Okay.

06 00 36 38 CMP Would you like to hear when we have put on? It probably screws up your dump schedule a little bit, doesn't it?

06 00 36 47 CC I got a nod down here on that question.

06 00 36 50 CMP Okay. We will try and do that -

06 00 37 40 CC And, Walt, on the landmark tracking: about all we need to get is low bit rate.

06 00 37 47 IMP Understand. All you need is low bit rate for the landmark tracking.

06 00 37 51 CC Okay. And we're going to lose you here; Ascension at 144 45.  
ASCENSION (REV 92)

06 00 45 30 CC Apollo 7, Houston through Ascension.

06 00 45 34 CDR Roger.

06 00 51 17 CC Apollo 7, Houston. We are 1 minute LOS Ascension; Tananarive at 145 plus 01.

06 00 51 26 CDR Roger.  
TANANARIVE (REV 92)

06 01 02 28 CC Apollo 7, Houston through Tananarive. Standing by.

06 01 02 48 CMP Houston, Apollo 7.

06 01 02 51 CC Go ahead, 7.

06 01 02 53 CMP We got a landmark on that last one and got five good marks on all ... updates and put the coordinates of land rate, the update coordinates on the tape. You should get it when it comes down.

06 01 05 35 CC Apollo 7, Houston. We are close to LOS Tananarive. We'll have ARIA on S-band at 145 plus 12.  
CARNARVON (REV 92)

06 01 16 10 CC Apollo 7, Houston through Carnarvon.

06 01 16 14 CMP Roger. Houston.

06 01 18 43 CC Apollo 7, Houston. Opposite omni.

06 01 18 48 CMP Say again, Jack.

06 01 18 50 CC Opposite omni, please.

06 01 23 12 CC Apollo 7, Houston. One minute LOS Carnarvon; we'll pick you up at Guam at 145 plus 28.

06 01 23 21 CMP Roger.  
GUAM (REV 92)

06 01 29 42 CC Apollo 7, Houston through Guam.

06 01 29 47 CC Stand by. ...

06 01 29 56 CC And, 7, we'll have a state vector update to send you over Hawaii.

06 01 30 12 SC ...

06 01 30 48 CC Apollo 7, Houston.

06 01 30 52 CDR Go ahead, Jack.

06 01 30 54 CC Okay. I have a PAD on this landmark tracking test that you're going to do here over pass beginning Hawaii.

06 01 31 16 CMP Go ahead, partner.

06 01 31 18 CC Okay. The first landmark, 10; it's south of ground track 65 miles, GET 145 plus 56, shaft 043, trunnion 34. The weather's clear at this landmark. Second landmark, 142; 18 miles north of ground track, GET 146 plus 17, shaft 347, trunnion 31. Looks like it's about five-tenths covered.

06 01 32 27 CMP Roger. We just got two this time, Jack?

06 01 32 30 CC Affirmative.

06 01 32 31 CMP I see. I'll try to squeeze in an unknown one in the middle somewhere.

06 01 32 36 CC Okay. Good.

06 01 32 54 CC And, Walt, could we get you to switch the S-band AUX TV switch OFF?

06 01 33 01 LMP That's a good idea.

06 01 33 46 CC We pick up Hawaii at 145 plus 41.

06 01 33 53 LMP Roger.

06 01 33 57 CC The last of the news that I didn't finish this morning: the National Institute of Health announced today that they have a development of a vaccine to prevent German measles. Tommy Smith won a gold medal in the 200-meter dash with a world record time of 19.8. Bob Seagren picked up the United States' sixth gold medal by winning the pole vault, with a world record

of 17 feet 8 and 1/2 inches. George Foreman of Houston won a split decision in the opening round of the Olympic boxing.

06 01 34 35 LMP Sounds like the home team is doing okay down there.

06 01 34 38 CC It sure is.

06 01 35 03 CDR Jack, that hurricane is really a doozy. I haven't seen anything like that, ever.

06 01 35 08 CC It's moving north, Wally. It should hit the coast of Florida, around Tallahassee.

06 01 35 16 CDR What are the highest winds on the outskirts?

HAWAII through ANTIGUA (REV 92)

06 01 42 00 CC Apollo 7, Houston through Hawaii.

06 01 42 01 CDR Loud and clear.

06 01 42 03 CC Roger. We would like to send you a state vector update whenever you're ready.

06 01 42 11 CMP Go, man.

06 01 42 21 CC Okay. Coming up, 7, and I'm ready to read you the NAV check whenever you are ready to copy.

06 01 43 14 CDR Go ahead, Jack.

06 01 43 16 CC Okay. GET 144 plus 50 plus 0000 minus 0936 minus 00891 1013.

06 01 43 43 CDR Is your update in now?

06 01 43 45 CC Affirmative. The update is in. The computer is yours.

06 01 44 32 CDR Here's your readback, Jack.

06 01 44 36 CC Go ahead.

06 01 44 47 CDR Houston, did you copy the readback?

06 01 44 49 CC Negative. I didn't copy the readback.

06 01 44 51 CDR It's on the DSKY.

06 01 44 54 CC Roger.

06 01 44 59 CC Copy the readback.

06 01 45 02 CDR That's a pretty good readback, hey?

06 01 45 04 CC Roger.

06 01 45 39 CC Apollo 7, Houston. Opposite omni.

06 01 48 45 CC Apollo 7, Houston.

06 01 55 37 CDR Jack, frames 143 and 144 are of San Diego.

06 01 55 41 CC Roger. Copy that.

06 01 55 44 CDR Loud and clear. There you can see all the way to North Island and Miramar, the whole scene.

06 01 55 59 CC And, Wally, I have this sextant star count PAD that I can give you any time.

06 01 56 06 CDR We'll wait till we finish this one landmark here.

06 01 56 08 CC Okay. No hurry.

06 01 56 09 CDR Roger.

06 01 56 24 CDR Got five marks.

06 01 58 26 CMP Houston, Apollo 7.

06 01 58 29 CC Go ahead, 7.

06 01 58 30 CMP Roger. Are you getting the data off of the computer?

06 01 58 34 CC Affirmative.

○ 06 01 58 36 CMP Roger. This is the alternate navigator doing the marking.

06 01 58 41 CC Roger.

06 01 58 42 CMP And we again got all zero's on the DELTA-R - DELTA-V updates, and we have some changes to the landmark location on the lat, long, and attitude. It turns out that point is 3600 feet under water.

06 01 58 57 CC Okay. Roger. Copy that.

06 01 59 02 CMP We took a sounding.

06 01 59 11 CDR Your weather looks good out on the Gulf. No thunderheads, a little bit of scattered cirrus way south of Beaumont, and that's just about it.

⊖ 06 01 59 19 CC Roger.

06 01 59 22 CDR Nothing west of you. All the way over to Freeport, it's clear as a bell.

06 01 59 41 CC Wally, we're trying to save some CAL 25 weather for you.

06 01 59 45 CDR Yes, I would like to get some of that. This isn't bad sailing here. Got a pretty big spinnaker out now.

HAWAII through ANTIGUA (REV 93)

06 02 00 00 CDR Thanks for getting that storm out of the way. I appreciate that.

06 02 00 05 CC Okay. Let me know when you are ready to copy that sextant star count PAD.

○

06 02 00 42 CC And, Wally, something else that you might note here. We didn't copy any indication of a canister change or of the O<sub>2</sub> purge which was about 4 hours ago.

06 02 00 55 CDR Yes, we've made number 12 canister change and the O<sub>2</sub> purge.

06 02 00 59 CC Okay. I understand they are both complete.

06 02 01 06 CDR Four optical on the O<sub>2</sub> purge?

06 02 01 09 CC Roger. That was the one at 141 30.

06 02 01 17 CDR We didn't check that off; we owe you that one; the canister was changed.

06 02 01 21 CC Okay. Copy that.

06 02 01 22 CMP Roger. We were busy TV-ing it, I think, about purge time.

06 02 01 27 CDR Yes, we were on camera then. You know we weren't doing it.

06 02 01 30 CC Roger. That is why we thought we would just ask.

06 02 01 32 CDR Oh, you're sneaky.

06 02 01 34 CMP Very good.

06 02 01 37 CDR Now you know why we don't like the TV cameras.

06 02 01 40 CMP Ready on the update.

06 02 01 43 CC Okay. This is star 23, roll 352, pitch 041, yaw 006; star 31, the same roll, pitch, and yaw settings. This will get you within - these stars are within 35 degrees of the sun LOS.

06 02 02 17 CMP Roger. GET of sighting?

06 02 02 20 CC Roger. 147 plus 31.

06 02 02 27 CMP Same number for both of them?

06 02 02 31 CC Roger. That is the same number for both.

06 02 03 18 CMP Houston, Apollo 7.

06 02 03 20 CC Go ahead, 7.

06 02 03 25 CC Go ahead.

06 02 03 26 CMP Roger. I was wondering if we could - if we could get an update for these 23 lunar landmark stars business?

06 02 03 36 CC Okay -

06 02 03 37 CMP Like some attitude to fly to and the approximate time to do it. I could find it by myself, but it might help a little if we had some ideas as to what - I mean, what roll angle or pitch angle it will be in.

06 02 03 50 CC Okay. In work.

06 02 03 51 CMP Okay.

06 02 03 53 CDR Jack, frames 145, 146, and 147 were taken at 03 - at 03 minutes.

06 02 04 10 CDR Houston, do you copy?

06 02 04 11 CC Roger. Copy that.

06 02 04 13 CDR Roger.

06 02 06 38 LMP Frame 178 taken at 07 30.

06 02 06 44 CC Roger.

06 02 06 49 LMP That's on magazine Sierra.

06 02 06 52 CC Copy.

0 06 02 08 25 LMP Frames 149, 150 taken at 07 35. ... in minutes and seconds.

06 02 08 39 CC Copy.

06 02 08 46 CDR We must be doing a bit more tracking today.

06 02 08 52 CC Say again, Wally.

06 02 08 54 CDR Did we do perigee?

06 02 08 57 CC You are just passing perigee now.

06 02 09 04 CDR Okay. We got a pitch rate change for nothing.

06 02 09 06 CC Okay. Copy.

06 02 09 10 CDR ... pitched up ... degrees local vertical way back up to SCS.

06 02 09 23 CC I didn't copy that last, Wally.

06 02 09 25 CDR That was pitch down 30 degrees, and it came right back up, almost to SCS. I had to stop it.

06 02 09 32 CC Okay. Copy.

06 02 09 38 CDR We've got an outside station coming in beautifully right now. It seems like every time we come through here.

06 02 09 46 CC Roger. Understand.

06 02 09 47 CDR Playing "True Love."

06 02 10 24 LMP Roger. We are stable now right at the perigee attitude.

06 02 10 29 CC Roger. Copy. We are about 1 minute LOS Antigua; we pick you up over Ascension at 146 plus 19.

06 02 10 39 LMP Roger.

0

## ASCENSION (REV 93)

06 02 20 04 CC Apollo 7, Houston through Ascension.

06 02 20 11 IMP Roger --

06 02 20 12 CMP Roger. Jack, we just had a very anomalous sort of pass here - wrote it in the data off our book ... by block 42 ... did the marks and the thing came into view about a minute and a half earlier than the time you gave us. It was away off to the north, more than just 18 miles; in fact, they had to yaw 20 degrees to even be able to see it, and anyway, managed finally to get two marks on it before we lost it. They got three new updates for DELTA-R DELTA-V, but they got some huge changes on the landmark coordinates.

06 02 20 52 CC Okay. We copied that, Donn.

06 02 20 58 CMP It's conceivable he could have marked on the wrong point, but I don't think he could have been that far off.

06 02 21 03 CC Okay. We have some information on this P23 moon star sighting.

06 02 21 12 CMP Okay. Stand by.

06 02 21 30 F FAL Flight. I'm still standing by for your reply.

06 02 21 47 F Attitude? Right.

06 02 22 05 CMP Roger. Go ahead with your update, Jack.

06 02 22 08 CC Okay, Donn. At a GET of 146 plus 00 plus 00, a roll of 347, pitch 097, yaw of 011 should be the landmark line of sight on the moon.

06 02 22 37 CMP Roger. Stand by, Jack. My pencil crapped out.

06 02 22 50 CMP Roger. I've got 146 on the hour. Is that right?

06 02 22 54 CC No, sir. 146 plus 40 plus 00, the roll 347, pitch 097, yaw 011 will put the landmark line of sight on the moon.

06 02 23 19 CMP Okay.

TANANARIVE (REV 93)

06 02 38 04 CC Apollo 7, Houston.

06 02 38 08 CMP Go ahead.

06 02 38 16 CC Apollo 7, Houston.

06 02 38 19 CMP Roger.

06 02 38 21 CC Donn, we got real poor COMM here at Tananarive; like to give you an updated GET for this moon star sighting of 147 plus 00 plus 00.

06 02 38 38 CMP ... Jack. Is that a landmark?

06 02 38 45 CC Roger. That's P23, moon star sighting. Time should be 147 plus 00 plus 00.

06 02 38 57 CMP ... must be a little late on that.

06 02 39 01 CC Okay.

06 02 39 03 CMP ... I had about 40 minutes of ATTITUDE HOLD giving.

06 02 39 06 CC Roger. Copy.

06 02 39 09 CMP We're in ATTITUDE right now.

06 02 39 12 CC Copy.

06 02 39 17 LMP Hey, Jack. Log another food bag failure - corn chowder today, meal 3 ...

06 02 39 26 CC Walt, I didn't copy that; COMM is pretty poor here over Tananarive because of the low elevation angle on the antenna. We would like you to switch your TMP power to AUX for this COMM test that we are going to do over Guam.

06 02 39 43 LMP Roger. When do you want me to switch?

06 02 39 46 CC Right now, Walt.

06 02 39 50 LMP Okay. Done.

06 02 39 52 CC Roger.

06 02 40 35 CC 7, we are about 1 minute LOS Tananarive; we have a real low angle pass at Carnarvon 146 plus 52.

CARNARVON (REV 93)

06 02 51 44 CMP ... butterscotch pudding, but nobody'll take it. Walt and Wally are trying to con me out of my ham and applesauce by offering me a whole meal for it.

06 02 52 04 CC Apollo 7, Houston.

06 02 52 07 CMP Roger.

06 02 52 09 CC Roger. We just got you in the middle of your transmission, Donn. Could you say again?

06 02 52 14 CMP Roger. We were just recording some comments on our food up here.

06 02 52 18 CC Okay.

06 02 52 21 CMP We were saying that Wally and I were trying to give away our butterscotch pudding, but nobody wants it. Walt likes to collect cocoa, so we can give our cocoa to him, and both of them were trying to con me out of my ham and applesauce. Walt offered me a whole meal for one dish. I guess the message is that we get a little tired of the very rich sweet things, and we still go for the meats and the fruits and the salads.

06 02 52 48 CC Okay. Copy that.

06 02 52 52 LMP I tried to call you before over the last station. I had a corn chowder bag failure, the second one of this type. It failed down where the spout comes out. It's failed down - right down where it goes into the bag itself, and the meal comes out some other hole.

06 02 53 10 CC Okay. Copy that.

06 02 53 11 LMP And it always happens to my favorite food.

06 02 53 13 CC Roger. This is about the best COMM we've had. It's an elevation angle less than 1 degree.

06 02 53 28 LMP That's pretty sensational.

06 02 53 57 CC We're 1 minute LOS Carnarvon; we'll pick you up at Guam at 147 plus 01.

06 02 54 03 CMP Okay.

## GUAM (REV 93)

06 03 01 53 CC Apollo 7, Houston through Guam.

06 03 01 58 IMP Roger.

06 03 02 00 CC Walt, will you turn up your S-band volume?  
We'll start this COMM load check.

06 03 02 08 IMP S-band volume up.

06 03 02 09 CC Okay.

06 03 02 42 CC Apollo 7, Houston.

06 03 02 44 IMP Roger. Houston, I'm reading you loud and clear.

06 03 02 46 CC You are loud and clear, also. Walt, up over  
Hawaii, we're going to have a state vector and  
DAP load update for you - to send you.

06 03 03 05 IMP Roger.

06 03 03 12 CC And after the DAP data load, we'd like to get  
a verification of NOUN 47 and NOUN 48. This  
is --

06 03 03 22 IMP You'd like verification of what?

06 03 03 24 CC NOUN 47 and NOUN 48 in the DAP data load.

06 03 03 33 IMP Roger. Understand. So we'll go to ACCEPT on  
your call over Hawaii.

06 03 03 37 CC Okay. Real fine.

06 03 04 43 CC Walt, if you're ready, I can give you the NAV  
check for this update over Hawaii - I can give  
it to you now.

06 03 04 59 IMP We'll pick it up at Hawaii while you are up-  
linking us.

06 03 05 02 CC Okay. No problem.

06 03 05 31 IMP Houston, Apollo 7.

06 03 05 33 CC Go ahead, 7.

06 03 05 38 CC Go ahead, Apollo 7.

06 03 05 41 IMP Donn's turning his S-band up. He wants to give you his data.

06 03 05 45 CMP Houston, Apollo 7.

06 03 05 46 CC Go ahead.

06 03 05 47 CMP Roger. I don't know if you read this on the computer. I've got P23 up, and I've got Alphard placed on landmark 5 on the moon, and these are the shaft and trunnion angles. Do you read them down there?

06 03 05 59 CC Roger. I'm copying them.

06 03 06 00 CMP Okay. I'll tell you that was one whale of a lot easier than that crazy earth horizon business.

06 03 06 12 CC Roger. Copy.

06 03 08 59 CC Apollo 7, Houston. One minute LOS Guam; Hawaii at 147 plus 16.

HAWAII through TEXAS (REV 93)

06 03 17 07 CC Apollo 7, Houston through Hawaii.

06 03 17 22 CC Apollo 7, Houston.

06 03 17 25 IMP Roger. Five-by.

06 03 17 26 CC Okay. If you will go to ACCEPT, we will send you a NAV load and then a DAP update.

06 03 17 45 CDR Houston, can we wait on this pass? We've got a DTO going here, and we need the computer for it.

06 03 17 51 CC Okay. That is fine.

06 03 17 54 LMP I'll take the PAD for the NAV check.

06 03 17 57 CC Okay. GET 154 plus 30 plus 0000 plus 1486 plus 03274 1368.

06 03 18 20 LMP Roger. Jack, we will take your update. We are in ACCEPT.

06 03 18 25 CC Okay. Coming up.

06 03 18 28 LMP Okay. Readback follows: 154 30 four balls plus 1486 plus 03274 1438. Over.

06 03 18 38 CC Negative on the last one, Walt: 1368.

06 03 18 43 LMP 1368. Sorry.

06 03 19 28 CC Apollo 7, Houston.

06 03 19 30 CDR Go ahead.

06 03 19 32 CC Okay. Wally, we are gradually picking up an increase in CO<sub>2</sub> there. You may have gotten a bad canister at that last change.

06 03 19 42 CDR Roger. See on this particular test here, by the way, this very brilliant star count test has us right up in the perigee torque area. We are going to really hose the fuel out.

06 03 19 56 CC Okay. Copy that.

06 03 19 59 CDR Now this one is on the experimenters, too. We are going to have some right interesting comments to make about celestial navigation when we get back.

0 06 03 20 11 CC There are going to be a lot of people who are going to be interested.

06 03 20 16 IMP Hey, Jack, we are like reading lmm; shouldn't we go ahead, let this thing hang in here until it gets up close to 76?

06 03 20 24 CC Roger. We are just trying to give you a little bit of a hack ahead of time, so you will know what to look for.

06 03 20 30 IMP Well, our criteria is 76, so we have not been concerned. It's just turned out to be the first one we've ever seen over one, that's all.

06 03 20 37 CC Roger.

06 03 21 26 CDR May we have the computer?

06 03 21 29 CC Roger. 7, we would like to verify the DAP data load. Not at this time, but some time later on. We would just like a verification on NOUN 47 and 48 in the DAP data load prior to tomorrow's burn. The computer is yours at this time.

06 03 27 18 IMP Houston, Apollo 7.

06 03 27 21 CC Go ahead, Apollo 7.

06 03 27 23 IMP Roger. NOUN 47 plus two balls 164 plus -

06 03 27 41 IMP Did you read?

06 03 27 43 CC Apollo 7, Houston.

06 03 27 45 IMP Roger. Jack, did you read NOUN 47?

06 03 27 47 CC Negative. Walt, you got it just as we were handing over stations here. Could you say it again?

06 03 27 54 LMP Can you read our DSKY? Can you read out DSKY, Jack?

06 03 28 03 CC Negative right now, Walt.

06 03 28 05 LMP Okay. NOUN 47 plus two balls 164 plus two balls 551 plus 29560. NOUN 48 minus three balls 76 minus three balls 47 plus 02110. Over.

06 03 28 24 CC Okay. We copy that. Could you place your PMP power to NORMAL?

06 03 28 30 LMP It's in NORMAL.

06 03 28 31 CC Copy.

06 03 28 36 LMP Hey, Jack, somebody might write down and leave it on my desk for when I get back how many different COMM modes they've checked out on this flight.

06 03 28 44 CC Okay. We'll get it to you.

06 03 30 06 LMP Hey, Jack, do you have time for a map update?

06 03 30 10 CC Map update in work.

06 03 30 59 CC Apollo 7, Houston. Opposite omni. And I have your map update.

06 03 31 04 LMP Roger.

06 03 34 11 CC Apollo 7, Houston. Opposite omni. I have your map update.

06 03 34 14 LMP Go, Jack.

06 03 34 15 CC Roger. REV 93, time of the node 146 plus 58 plus 58, longitude 122.4 east.

○ 06 03 34 41 CC We are about 1 minute LOS. We'll pick you up at Tananarive at about 148 plus 09.  
TANANARIVE (REV 94)

06 04 11 40 CC Apollo 7, Houston through Tananarive.

06 04 11 45 CDR Roger. Jack, read you loud and clear.

06 04 11 47 CC Wally, I would like to ask you if you powered down?

06 04 11 52 CDR Affirmative.

06 04 11 53 CC Okay. Thank you.

06 04 11 55 CDR Find our suit - heat rate must have peaked about - a suit temperature of about 64 degrees just before power down - and held there for a while after power down. Assuming that it will improve with power up plus holding real great for 4 to 5 minutes, and then it's pretty hot. We felt the heat very easily. Read that?

○ 06 04 12 28 CC Roger. You were a little big garbled, but I think we've got most of it.

06 04 12 34 CDR Okay. On the star check: only the two stars called up by the program were seen, no others with the sextant.

06 04 12 48 CC Roger. Understand.

06 04 12 51 CDR And today will be very busy, and tomorrow, we have the big burn - burn 5.

06 04 12 58 CC Go ahead.

○ 06 04 13 00 CDR We are deleting the TV pass tomorrow.

06 04 13 13 CDR Houston, Apollo 7.

06 04 13 22 CC Roger. We copy that. We are digesting that, Wally.

06 04 13 19 CDR Say again.

06 04 13 21 CC We copy all that.

06 04 13 23 CDR ... back today, and it looked awful ... I didn't want to do it before our first burn, but it can foul up our time lines considerably.

06 04 13 34 CC Roger. Copy.

06 04 13 37 CDR Roger.

06 04 13 43 CDR That's about all I have for you.

06 04 14 07 CC Apollo 7, Houston.

06 04 14 09 CDR Go ahead.

06 04 14 11 CC Wally, is the suit temperature or cabin temperature getting a little more comfortable now that you have powered down?

06 04 14 18 CDR That's affirm. I should have told you: we are down to about 68 degrees right now.

06 04 14 23 CC Okay. Copy.

06 04 14 25 CDR We're doing fine.

06 04 14 44 CDR Jack, in your planning for subsequent maneuvers, you should try to avoid being out at SCS or PVS at more than 20 degrees as you pass through perigee. Over.

06 04 14 58 CC Okay. I copied that, Wally.

06 04 15 00 CDR Roger. You're going to have to save that -

06 04 15 14 CDR ... on the fuel and the attitude.

06 04 15 20 CC Okay. Understand. We are getting pretty close to LOS Tananarive; we will pick you up at Guam at 148 plus 36.

06 04 15 29 CDR Roger.

06 04 15 30 CC And Mercury at 148 plus 33.  
MERCURY (REV 94)

06 04 33 56 CC Apollo 7, Houston through the Mercury.

06 04 34 00 CDR Roger. Read you loud and clear.

06 04 34 05 CC Roger. Read you also.

06 04 34 10 CDR ... about 25 minutes ...

06 04 34 23 CDR Hey, Jack.

06 04 34 24 CC Go ahead, Wally.

06 04 34 26 CDR Okay. I guess we'll chlorinate water tonight, about 139 50.

06 04 34 33 CC Okay. Wally, you're about two-by here; you're pretty garbled. We might have a little better luck over Guam, which is coming up here.

06 04 34 44 CDR Okay. We will chlorinate water today.

06 04 34 55 CC Okay. We understand.  
GUAM (REV 94)

06 04 37 56 CDR Hello, Houston, Apollo 7. Do you read?

06 04 37 59 CC Roger. Go ahead, Apollo 7.

06 04 38 02 CDR Have you had a chance to work up our fuel status after today's operations?

06 04 38 09 CC Okay. Understand you want to get a present fuel status - fuel status now?

06 04 38 15 CDR That's affirm; any time.

06 04 38 18 CC Okay. We are summarizing that now; we'll probably have it up to you over Hawaii.

06 04 38 22 CDR Very good.

06 04 38 35 CC Apollo 7, your fuel number for your onboard chart is 666.

06 04 38 45 CDR Roger. Readback: 666.

06 04 41 37 CC Apollo 7, Houston. One minute LOS Guam; Hawaii at 148 plus 51.

06 04 41 44 CDR Roger.

HAWAII through HUNTSVILLE (REV 94)

06 04 51 21 CC Apollo 7, Houston through Hawaii.

06 04 51 24 CDR Loud and clear.

06 04 51 27 CC Okay. Walt, I've got a little message for you here.

06 04 51 33 CDR Walt's off COMM right now. Do you want me to relay, or should I get him up?

06 04 51 40 CC Okay. Wally, are you in the right seat?

06 04 51 44 CDR Say again.

06 04 51 45 CC Can you get in the right seat to do some readings of a couple of gages here?

06 04 51 50 CDR Stand by.

06 04 52 04 CDR Go ahead.

06 04 52 05 CC Okay. Wally, prior to this O<sub>2</sub> fan tank - O<sub>2</sub> tank 2 fan cycle that we are going to give you here, we would like to read out phase A, B, and C on AC bus 2.

06 04 52 25 CDR Roger. Phase A is 150.5, B 115.5, and C 115.

06 04 52 39 CC Okay. Now, Wally, we would like to turn O<sub>2</sub> fans tank 2 ON now, and then read out A, B, and C again.

06 04 52 48 CDR Got the fans tank 2 ON now. Phase A is - went up just a smidgen - 116, B is about 115.7, and C is still 115.

06 04 53 09 CC Okay. Wally, after 3 minutes of fan ON, we would like to have you be reading AC 2 phase B when you turn the fans OFF.

06 04 53 22 CDR Prior to, or subsequent?

06 04 53 24 CC Right during the switch operation, when you turn the fans in tank 2 OFF, be reading phase B.

06 04 53 31 CDR Okay. I'd say that's a pretty good job of sacking out that AC 1, AC 2 problem, anyway.

06 04 53 48 CC I didn't copy that, Wally.

06 04 53 49 CDR That's a good job down there of sacking out that AC bus 1, AC bus 2 problem.

06 04 53 54 CC Roger. Thank you.

06 04 53 56 CDR I was kind of a crank when it first happened.

06 04 53 59 CC I don't blame you a bit.

06 04 54 02 CDR I like to feel direct - direct coming home.

06 04 55 05 CDR Hey, Jack, you with me?

06 04 55 07 CC Roger, Wally. Go ahead.

06 04 55 08 CDR Would you ask someone in the support room how many frames per foot there are in the 16mm camera?

06 04 55 18 CC Okay. We'll get it.

06 04 55 21 CDR Thank you.

06 04 56 10 CDR Hey, Jack, do you read?

06 04 56 11 CC Go ahead.

06 04 56 13 CDR Okay. We just ran the switch valve test, and Walt looked at the phasing light on the switch; it dropped a smidgen - maybe a quarter of a volt to half a volt.

06 04 56 24 CC Okay. Thank you very much, Wally. I have some RCS redline data for you.

06 04 56 31 CDR Stand by.

06 04 56 40 CDR Go ahead.

06 04 56 41 CC Okay. For service module - for an SCS service module RCS deorbit, the value is 581.

06 04 56 55 CDR Roger.

06 04 56 56 CC Okay. For adapt RCS deorbit, the value is 520; and the value for hybrid deorbit, the value is 223.

06 04 57 14 CDR Roger.

06 04 57 15 CC Okay. We show quad A is just a smidgen under the SCS redline but has ample margin for adapt deorbit.

06 04 57 27 CDR Roger.

06 04 57 31 CDR Jack, on these landmark sightings that you call up to us for targets of opportunity --

06 04 57 39 CC Roger.

06 04 57 40 CDR -- if you all could keep book on that - we missed Luzon this last pass; we might have had a whack at it. It's kind of hard to remember all those ...

06 04 57 52 CC Okay. You are a little bit hard to read. We'll pick it up on the recorder here.

06 04 57 58 CDR On the landmark passes?

06 04 58 00 CC Yes. Go ahead.

06 04 58 02 CDR If you can give us the time when they come up, whenever, that helps us quite a bit because we can write it on the flight plan.

06 04 58 09 CC Okay. Real fine. After we hand over to Huntsville - to - we get through to Huntsville here, we are going to hand over to ARIA so you might turn up your S-band volume. In a couple of minutes, we'll have ARIA coverage on S-band for about another 4 or 5 minutes.

06 04 58 27 CDR Very good. That was a good watch today, Jack.

06 04 58 31 CC It's been a good day; we've done a lot.

06 04 58 35 CDR We sure did.

06 04 58 39 CC We're looking forward to tomorrow.

06 04 58 41 CDR Real fine.

06 04 59 38 CC Apollo 7, Houston.

06 04 59 41 CDR Go ahead.

06 04 59 42 CC Okay. Wally, on that question that you asked:  
the 16mm camera frame, there are 40 frames per  
foot of film.

06 04 59 58 CDR How many feet do we have in each magazine?

06 05 00 02 CC I didn't copy that last little, Wally.

06 05 00 06 CDR How much footage do we have in the magazine?

06 05 00 11 CC Okay. Stand by.

06 05 00 27 CC Wally, there are 130 feet per magazine.

06 05 00 34 CDR Roger. Thank you, Jack.

ARIA 3 (REV 94)

06 05 02 10 CC ARIA 3, go REMOTE.

06 05 02 19 CT REMOTE.

06 05 02 59 CC Apollo 7, Houston through ARIA.

06 05 03 03 IMP Houston, Apollo 7. Standing by.

06 05 03 07 CC Houston standing by also.

06 05 06 57 CC Apollo 7, Houston. One minute LOS ARIA; pick  
you up at Tananarive at 149 plus 42.

06 05 07 06 CDR Roger.

TANANARIVE (REV 95)

06 05 43 42 CC Apollo 7, Houston through Tananarive.

06 05 44 29 CC Apollo 7, Houston, Tananarive. Standing by.

06 05 50 15 CC Apollo 7, Houston. One minute LOS; Mercury at  
06.

06 05 50 20 CDR Roger. We read you.

06 05 50 25 CC Roger. I read you that time.

06 05 50 28 CDR Good evening, Ron.  
MERCURY (REV 95).

06 06 06 38 CC Apollo 7, Houston. Standing by.

06 06 06 42 CDR Roger. Loud and clear.

06 06 06 44 CC Roger. Same.

06 06 06 48 CDR Donn Eisele wants 20 clicks of water logged and  
two aspirin.

06 06 06 52 CC Roger.

06 06 07 09 IMP Hey, Ron, log the IMP with 15 clicks of water.

06 06 07 15 CC Roger.

06 06 07 24 CDR How's it going down there?

06 06 07 26 CC Real fine; beautiful day down here today.

06 06 07 29 IMP We got some beautiful pictures of it.

06 06 07 32 CC Very good.

06 06 07 36 IMP You guys getting tired of this long flight or  
anything?

06 06 07 41 CC No, not really. I'd like to be there with you.

06 06 07 44 CDR We got room.

06 06 07 46 CC Good.

06 06 07 48 CDR That hurricane was really something to see. It  
stood out very clearly today.

06 06 08 34 CC Apollo 7, Houston.

06 06 08 37 CDR Go.

06 06 08 38 CC Roger. We concur on negative TV tomorrow.

06 06 08 41 LMP Very good.

06 06 09 13 CC Apollo 7, Houston. Looks like pins have come undone again on IMP's BIOMED harness somewhere in there.

06 06 09 23 CDR Okay. Roger. We'll get it glued together.

06 06 09 25 CC Roger.

06 06 09 26 LMP Okay. Ron, I'll get on it. The reason for that is because I've got kind of a spider's web of leads down here. Even after they made this harness over, I've got about 6 inches extra on one lead, and a couple others are apparently pretty tight, I guess.

06 06 09 43 CC Roger. I understand.

06 06 09 53 LMP But I've got this ground wire on, so whatever you do comes through good, doesn't it?

06 06 10 05 CC It was real good for a long time there, Walt; then last night, we noticed that it looked like maybe the ground lead was possibly coming partially loose or something like that.

06 06 10 18 CC The sensor, that is.

06 06 10 20 LMP Okay. I'll take a look at it.

06 06 10 55 CC I've got a one-line update to your targets of opportunity for two balls 5; that's two balls 5.

06 06 11 02 CDR Go.

06 06 11 03 CC Roger. It's the area north of the Colorado River.

06 06 11 09 IMP North of the Colorado River? Seriously?

06 06 11 14 CC Roger. Evidently it must be in the mountains up in there cause the river runs -

06 06 11 18 CDR The Colorado River runs north and south. That sounds like Alaska.

06 06 11 22 CC Me, too.

06 06 11 37 CDR Ron, we're trying to figure out, just for the fun of it, what does burn 5 do to our inclination? Does anybody have a story on that handy? It's no big deal, just curious.

06 06 11 51 CC Roger. Will check into it; I've got the -

06 06 12 04 CC Apollo 7, Houston. Opposite omni.

06 06 12 35 CDR Ron, while I'm looking at it, do you have any typhoons in the Far East, or ... in the Phillipines?

06 06 12 48 CC I'll check on it. I don't recall seeing any on the map there this evening.

06 06 12 52 CDR Hawaii and Australia, wooly woolies?

06 06 13 37 CC Apollo 7, Houston. About 1 minute to LOS.

06 06 13 40 CDR Roger.

06 06 13 41 CC Now, your preburn inclination is 31.22 and post-burn 30.08; GETI will be about 165 plus 00.

06 06 13 58 CDR We thought we'd drive it in a little bit. Okay.

06 06 14 03 CC And DELTA-V 1646, burn about a minute and 6 seconds.

06 06 14 18 CDR Roger.

06 06 14 23 CDR North of the Colorado River we won't get to for  
awhile.

06 06 14 26 CC Yes. That's right.

HAWAII (REV 95)

06 06 25 25 CC Apollo 7, Houston through Hawaii.

06 06 25 29 CDR Roger.

06 06 25 31 CC Roger. Loud and clear.

06 06 25 33 CDR Same.

06 06 25 38 CC You're right. Tropical Storm Gloria is due east  
of Luzon about this time, so you probably saw it  
when you were going by there.

06 06 25 45 CDR Roger. That's what we call a ..., right?

06 06 25 49 CC Roger.

06 06 26 00 CDR That's two for Apollo 7 now, isn't it?

06 06 26 04 CC That's correct.

06 06 26 13 CC 7, Houston. We've got a new update on the  
amount of film in your magazines.

06 06 26 19 CC You have 80 feet in 16mm magazines.

06 06 26 25 CDR Fabulous. Oh, 80 feet rather than 130; that's  
not fabulous. Okay.

06 06 26 30 CC Yes, that's right.

06 06 26 32 CDR Okay. I'll have to do my arithmetic over again  
then. I guess you can save us by telling us how  
long we can run it, 1 frame, 6 frames, and 16.

06 06 26 44 CC Roger. I'll get that information.

06 06 26 46 CDR Oray.

06 06 26 50 CDR We mapped the whole southwest corner of the United States with 1 frame a second on an 18mm lens today.

06 06 26 59 CC Okay.

06 06 27 01 CDR That was from - oh, just west of San Diego all the way through to the hurricane on into Florida.

06 06 27 15 CC Roger.

06 06 27 18 CDR That was done on S0368 movie in case anybody gets excited.

06 06 27 24 CC Roger.

06 06 28 01 CC Wally, you might be interested; they're not even waiting for you to get back. We're using the third deck there for simulations tonight for the next mission.

06 06 28 12 CDR I'm sorry I missed that.

06 06 28 14 CC Roger. We're using - they're simulating the next mission upstairs tonight.

06 06 28 20 CDR Very good. Tell them to take better food along with them.

06 06 28 23 CC Okay.

06 06 29 10 CC Apollo 7, Houston. I have your film run times, there.

06 06 29 18 IMP Say again, Ron?

06 06 29 19 CC Roger. I have your film run time, your 16mm run times.

06 06 29 23 IMP Okay.

06 06 29 24 CC At 1 frame, in 53 minutes 20 seconds.

06 06 29 31 CC At 6 frames, it's 8 minutes 54 seconds; at 16,  
it's 3 plus 20.

06 06 29 43 LMP Thank you.

06 06 29 57 CC Apollo 7, Houston. S-band volume up at 35 plus  
30 for ARIA.

06 06 30 08 LMP Roger. 35 30.

06 06 30 33 CDR Ron, frame 152 on the Sierra mag was on the big  
island of Hawaii.

06 06 30 41 CC Roger.  
HUNTSVILLE (REV 95)

06 06 31 33 CT Huntsville AOS.  
ARIA 3 (REV 95)

06 06 35 42 CC ARIA 3, go REMOTE.

06 06 35 45 CT ARIA 3, clear and loud. Go REMOTE.

06 06 35 52 CC Apollo 7, Houston through ARIA 3 S-band.

06 06 36 18 CC Apollo 7, Houston through ARIA. Over.

06 06 36 40 LMP Apollo 7, ...

06 06 36 44 CC Apollo 7, Houston. You broke up that time; say  
again.

06 06 36 49 LMP Roger. ... S-band up ... or not ...

06 06 36 55 CC Roger. You're still breaking up.

06 06 36 58 LMP Roger. Hear you very weak.

06 06 37 04 CC Roger. COMM's not too good this time.

06 06 37 07 LMP ... real high squall in the background.

06 06 37 14 CC Roger. I copied that.

06 06 38 39 CC Apollo 7, Houston. You should be closer to ARIA now. Is the voice any better?

06 06 39 05 LMP Say again, Ron.

06 06 39 11 CC Still not much better. You're still breaking up, and I must be coming through quite weak still.

06 06 39 42 CC Apollo 7, Houston. One minutes LOS; Tananarive at 17.  
TANANARIVE (REV 96)

06 07 18 29 CC Apollo 7, Houston through Tananarive. Standing by.

06 07 18 35 CDR Loud and clear.

06 07 18 36 CC Roger. The same.

06 07 23 04 CC Apollo 7, Houston. One minutes LOS; Mercury at 41.

06 07 23 11 CDR Roger.  
MERCURY (REV 96)

06 07 41 07 CC Apollo 7, Houston through Mercury. Standing by.

06 07 41 11 CDR Roger.

06 07 41 12 CC Loud and clear.

06 07 46 15 CDR Frames 154 and 155 of Japan.

06 07 46 23 CC Roger. Copy.

06 07 46 27 CDR On magazine Sierra.

06 07 46 29 CC Roger.

06 07 46 39 CC 7, Houston. If you've attempted BIOMED fix, we still have no joy.

06 07 46 45 IMP Hey, Ron, I went ahead and checked all these things. They're all made up, and I don't think there's anything else I can do, but I'll check them again when I go to bed in a little bit, but they look to me like everything's okay.

06 07 47 01 CC Okay. We might have an internal break or something in one of the wires, and we'll work on it later; no sweat.

06 07 47 21 CDR Along the peak of Mount Fujiyama, there's snow on the top.

06 07 47 32 CC Say again.

06 07 47 35 CDR Frame 155 of Mount Fujiyama.

06 07 47 39 CC Roger.

HAWAII (REV 96)

06 07 58 13 CC Apollo 7, Houston through Hawaii.

06 07 58 20 LMP Roger. Could you give me a readout of our O<sub>2</sub> manifold pressure?

06 07 58 28 CC Roger. We're standing by for lock-up - don't have it yet.

06 07 59 23 CC Apollo 7, Houston. We're reading 104 now.

06 07 59 31 LMP Roger. ... 103.

06 07 59 38 CC Roger. 103.

06 07 59 43 LMP Roger.

06 08 01 20 LMP Hey, Ron, the redundant component check is GO.

06 08 01 24 CC Roger.

O 06 08 01 31 CC 7, Houston. Sometime when you get a chance there, we could use more or less a taste versus time summary on your water.

06 08 01 49 IMP Say again?

06 08 01 50 CC Roger. We could use a kind of a taste versus time from chlorination on the potable water.

06 08 02 00 IMP Well, now you've brought the subject up - you want to talk to him?

06 08 02 04 CDR We just put the chlorine in about 15 minutes ago, just before your pass. We are a little concerned about the rate to put it in. It's a rather brown-looking goopy thing at the base of the chlorine injector, and I'm not sure - rust or what - but I'm not sure that I'm happy with it at this time.

06 08 02 40 CC Roger. Houston. You went through a keyhole there, and we're still in one, really. At the base of what? And -

06 08 02 53 CDR If I had that on my water faucet, I'd clean it off or get a new faucet.

06 08 03 00 CC Roger.

06 08 03 07 CDR If I had it in my swimming pool, I'd call for pool service.

06 08 03 38 CC About 30 seconds LOS; Redstone at 46.

06 08 03 43 CDR Roger.

06 08 03 46 CC Belay that Red - Redstone at 14.

O

06 08 03 50 CDR Roger. 14.  
REDSTONE (REV 96)

06 08 15 06 CC Apollo 7, Houston through Redstone. Standing  
by.

06 08 15 10 CDR Roger.

06 08 15 13 CC Roger. Loud and clear.

06 08 15 16 CDR ... just off Hawaii, we saw a big smoke trail ...

06 08 15 28 CC 7, Houston. Say it again.

06 08 15 31 CDR We saw the smoke trail of a ship at about  
07 45 GETI.

06 08 15 40 CC Roger.

06 08 15 41 CDR Seven minutes 45 seconds. Make Gordo Cooper  
happy to tell him that one.

06 08 15 45 CC It sure will.

06 08 15 46 CDR We haven't seen any smoke counts up in the  
Himalayas, and now it's night, so I guess we're  
losers on that one.

06 08 15 52 CC Roger.

06 08 15 56 IMP Haven't seen any trucks of the Imperial Valley  
yet, either.

06 08 16 01 CC Okay.

06 08 16 03 CDR We'll look for water skiers on Taylor Lake this  
weekend.

06 08 16 08 CC Very good.

06 08 18 43 CC 7, Houston. About 30 seconds LOS. Walt, you  
might be advised it's the sternal connectors  
on the BIOMED that seem to be acting up.

06 08 18 52 LMP Did you say the sternal connectors?  
06 08 18 54 CC Affirmative.  
06 08 18 56 LMP Okay. I'll check it over good before I go to bed.  
06 08 18 59 CC Roger.  
06 08 19 00 CDR We'll have all of that just to ...  
06 08 19 12 LMP I took care of my stern problem.  
06 08 19 16 CC Roger.  
ASCENSION (REV 97)  
06 08 41 41 CC Apollo 7, Houston through Ascension.  
06 08 41 44 CDR Roger. Thank you.  
06 08 41 46 CC Roger. Loud and clear.  
06 08 41 54 LMP Anything more on the news down there, Ron?  
06 08 42 01 CC Roger. We're working on some.  
06 08 42 04 LMP Okay. Anybody have the Lima Sierra update?  
06 08 42 10 CC Roger. Your hydrogen margin is 2.6 pounds now; your O<sub>2</sub> margin is 58 pounds; Lima Sierra 073/061, Sierra Foxtrot 075, Echo Kilo plus 003.  
06 08 42 57 LMP Roger. Thank you.  
06 08 43 21 CC The Olympics are getting started tonight sometime; we don't have any information coming in on that yet.  
06 08 43 29 LMP Roger.  
06 08 44 10 LMP Hey, Ron. How are the surgeons doing on curing colds for long range tonight?  
06 08 44 17 CC They're still working on it. Some guy down here is also working - facetiously, that is - to

determine if you would have gotten a cold had you not been flown.

06 08 44 32 IMP Had we not what?

06 08 44 34 CC Had you not taken the flight.

06 08 44 37 CDR Roger. That's very significant.

06 08 44 42 CC I don't know how he's going to do it, but he's working on it.

MERCURY (REV 97)

06 09 17 05 CC Apollo 7, Houston through Mercury. Opposite omni.

06 09 17 10 CDR Roger. Stand by.

06 09 17 41 CC Apollo 7, Houston. I have a one-line flight plan update.

06 09 17 50 IMP Wait one.

06 09 17 56 CDR The only thing we have to look forward to is China and Japan, so you won't have to write.

06 09 18 03 CDR Okay. Go, Ron.

06 09 18 06 CC Okay. It's at 154 plus 00, a fuel cell O<sub>2</sub> purge. This is a little early, but it allows us to get another one in just prior to the burn.

06 09 18 22 IMP Roger. Hey, Ron, tell the doctors not to worry about the cold. I always understood that it takes a week to get rid of it if you treat it and 7 days if you don't. Tomorrow's our eighth day, so it'll probably be gone.

06 09 18 47 CC Roger.

06 09 18 53 CC The doctor really confirms that.

06 09 19 05 CC Houston. To verify up telemetry MANNED TO  
NORMAL.

06 09 19 12 LMP Always.

06 09 19 19 CC Roger.

06 09 19 24 CC By the way, the guy I was talking about before  
on the colds: I just heard that over the news.  
It's not one of our guys.

06 09 19 31 LMP Oh, that's encouraging anyway.

06 09 19 33 CC Roger.

06 09 19 40 CDR Thank God we're not paying that cat.

06 09 19 43 CC Concur.

06 09 20 00 CC We have a little information here if you are  
concerned about maybe the drop in batter volt-  
ages that we were --

06 09 20 07 CDR - Go ahead.

06 09 20 09 CC Roger. Looks like it's a nominal-type thing.  
This downward shift corresponds to a nominal  
transition from the test to the plateau. ...  
and it's --

06 09 20 26 CDR Roger.

06 09 20 27 CC -- It normally happens just about where we  
have now, 8 to 14 amp-hours discharge out of  
the battery. And we're predicting an end-of-  
mission voltage on batt A and B of 30 to  
31 volts.

06 09 20 43 CDR Roger. Right now, we are looking at Fujisan.

06 09 20 51 CC Roger. Lot of snow?

06 09 20 55 CDR The usual white peak.

06 09 21 00 LMP Ron, how about someone marking our position now, and let us know how far away we were from Fuji?

06 09 21 06 CC Wilco.

06 09 21 10 CDR One fifty nine and 160 - 159 at Shikoku and 160 - long shot - at Fujisan.

06 09 21 18 CC Roger.

REDSTONE (REV 97)

06 09 46 48 CC Apollo 7, Houston through Redstone. I have block data number 17.

06 09 46 53 LMP Ready to copy. Go.

06 09 46 57 CC Roger. 099 dash Alfa Charlie minus 028 minus 0180 155 plus 27 plus 54 4608.

06 09 47 18 LMP Say, Ron, can you be working on a map update while I'm doing this?

06 09 47 22 CC Affirmative. 100 dash Alfa Charlie plus 081 minus 0240 157 plus 00 plus 51 4205, 101 dash 2 Charlie plus 205 minus 0239 158 plus 35 plus 56 3799, 102 dash 2 Alfa plus 276 minus 0270 160 plus 10 plus 26 3594, 103 dash 1 Bravo plus 237 minus 0616 161 plus 35 plus 40 3725, 104 dash 1 Alfa plus 297 minus 0627 163 plus 10 plus 40 3533. Over.

06 09 49 18 LMP Roger. Was 99 Alfa Charlie the first one?

06 09 49 21 CC Affirmative.

06 09 49 23 IMP Minus 028 minus 0180 155 plus 27 plus 54 4608, 100 dash Alfa Charlie plus 081 minus 0240 157 plus 00 plus 51 4205, 101 dash 2 Charlie plus 205 minus 0239 158 plus 35 plus 56 3799, 102 dash 2 Alfa plus 276 minus 0270 160 plus 10 plus 20 3594, 103 dash 1 Bravo plus 237 minus 0616 161 plus 35 plus 40 3725, 104 dash 1 Alfa plus 297 minus 0627 163 plus 10 plus 40 3533. Over.

06 09 50 24 CC Roger. In area 102, 2 Alfa, The GETI 160 plus 19 plus 26.

06 09 50 35 IMP 160 plus 10 plus 26. Standing by for the map update.

06 09 50 41 CC Roger. REV 97, GET 152 plus 53 plus 56, longitude 31.6 east.

06 09 51 06 CDR Roger.

06 09 51 33 CC Apollo 7, Houston. The United States beat Yugoslavia in basketball today 73 to 58.

06 09 51 43 IMP Roger.

06 09 51 52 CC Now, you might be interested that the stock market is fired by rumors of a possible halt in the bombing of North Viet Nam, bounded ahead today in third highest volume in the exchange history. The volume of 21.06 million; Dow Jones was up 3.60 at 958.91.

06 09 52 17 CDR Roger. That's the highest on record, isn't it?

06 09 52 21 CC Not quite sure. I don't think so.

06 09 52 31 CC It looks like Hurricane Gladys is expected to go ashore in a relatively sparsely populated area of Florida.

06 09 52 42 CDR That's fortunate.

06 09 52 50 CC It was also announced today that Mrs. John F. Kennedy will marry shipping tycoon Aristotle Onassis.

06 09 53 00 CDR Oh, my!

06 09 53 40 CC Walt, I have your present battery ampere-hours if you have a minute.

06 09 53 45 LMP Roger. Go ahead with it.

06 09 53 47 CC Roger. A 30.8, B 28.4, and C is 39.0.

06 09 54 01 LMP Roger. Thank you.

06 09 54 20 CC AOS Ascension at 12.

06 09 54 23 LMP ... Jack.

ASCENSION (REV 98)

06 10 12 28 CC Apollo 7, Houston through Ascension. Standing by.

06 10 12 36 CMP Roger. Houston, Apollo 7.

06 10 12 39 CC Roger. Good morning.

06 10 12 41 CMP How are you?

06 10 12 43 CC Good shape.

06 10 12 46 CMP I'd like to log in two aspirin and 15 clicks of water each for the commander and the LM pilot.

06 10 12 52 CC Roger.

06 10 14 09 CC Apollo 7, Houston. Opposite omni.

06 10 14 15 CMP Roger.

06 10 20 28 CC 7, Houston. LOS. Mercury at 49.

06 10 20 36 CMP Roger.

MERCURY (REV 98)

06 10 49 09 CC Apollo 7, Houston through Mercury.

06 10 50 13 CC Apollo 7, Houston through Mercury. Standing by.

06 10 50 19 CMP Roger. Houston, Apollo 7.

06 10 50 22 CC Roger. Loud and clear.

06 10 50 25 CMP Ron, this Donn. I'd like to register a strong complaint on the lithium hydroxide storage cans on the floor. That - A2, I believe is the number - they're the ones that are under Wally's couch. They're an old type of box left over from Block I. And the lids: it takes a tremendous amount of force to make them close. They're just not suitable at all.

06 10 50 54 CC Roger. I understand.

06 10 50 57 CMP The new type ones with the rounded corners and the new latches are great, and they come in ...

06 10 51 04 CC Roger.

GUAM (REV 98)

06 10 52 16 CC Apollo 7, Houston. Opposite omni.

06 10 57 32 CC Apollo 7, Houston. Request you turn O<sub>2</sub> tank 2 fan on for 5 minutes then off.

06 10 57 43 CMP Roger. O<sub>2</sub> going on.

06 10 57 47 CC Roger.

06 10 59 46 CC Apollo 7, Houston. One minute LOS; Ascension 20.

06 10 59 59 CMP Apollo 7. Roger.

REDSTONE (REV 98)

06 11 20 46 CC Apollo 7, Houston through Redstone.

06 11 20 52 CMP Roger. Houston, Apollo 7.

06 11 20 55 CC Roger. Loud and clear. Donn, we would like to get a rundown on your health status: medication, sleep, and what have you.

06 11 21 05 CMP Say again.

06 11 21 06 CC Roger. Just a little resume of your status: cold, medication, sleep.

06 11 21 15 CMP Roger. I got about 5 hours sleep last night which seems like enough. I'm not a bit tired. We still have head colds. My ears are starting to clear up somewhat, but I still got pretty stuffy sinuses. Wally and Walt are still complaining of stopped-up ears and head.

06 11 21 37 CC Roger.

06 11 21 51 CC And we're assuming no medication on your part other than reported aspirin.

06 11 21 57 CMP That's correct. We decided to save the Actifed till the last day or so.

06 11 22 03 CC Roger. Another thing for our future flight planning here on your procedures book in the

control modes, if you could somehow give us a  
rundown: either number them down the page or  
something like that, and give me the numbers  
you have not completed, so we can kind of plan  
maybe on RCS fuel.

06 11 22 51      CMP      Okay, Ron. I'll do that a little later. I'm  
trying to eat my breakfast right now.

06 11 22 55      CC      Roger. No hurry.

06 11 22 57      CMP      Yes, I think we've covered most of them, one  
way or another.

06 11 23 02      CC      Roger.

06 11 23 04      CMP      I don't know whether, or you know how much data  
got down on the ball, but I think we have been  
in just about every control mode.

06 11 23 12      CC      Roger.

06 11 23 32      CC      You haven't had any PT for breakfast yet, have  
you?

06 11 23 44      CMP      Yes, I've got a little bit right here, right  
now.

06 11 23 47      CC      Roger.

06 11 23 48      CMP      ... anyway. You talking about fortified Tang?

06 11 24 06      CC      Something like that.

06 11 24 32      CC      Apollo 7, Houston. Opposite omni.

06 11 27 09      CC      Apollo 7, Houston. One minute LOS; Ascension  
at 46.

06 11 27 16      CMP      Roger.

## ASCENSION (REV 99)

06 11 46 22 CC Apollo 7, Houston through Ascension.

06 11 47 22 CC Apollo 7, Houston, Ascension. Standing by.

06 11 52 06 CC Apollo 7, Houston. Two minutes to LOS; Mercury at 22.

06 11 52 13 CMP Roger.

06 11 52 16 CC Roger.

06 11 52 17 CMP Roger.

06 11 52 19 CC Houston, go.

06 11 52 32 CC Apollo 7, Houston. Say again.

06 11 52 39 CMP Oh, it was nothing. I was just acknowledging.

06 11 52 40 CC Oh, Roger. Sorry.

06 11 53 23 CC Apollo 7, Houston. We've lost your BIOMED now.

06 11 53 30 CMP Roger. BIOMED was disconnected temporarily.

06 11 53 36 CC Roger.

06 11 53 59 CC Apollo 7, Houston. Verify O<sub>2</sub> tank 2 fan OFF.

## MERCURY through GUAM (REV 99)

06 12 23 11 CC Apollo 7, Houston through Mercury. Standing by.

06 12 23 17 CMP Roger, Houston.

06 12 23 21 CC Roger. You're loud and clear.

06 12 23 40 CC Say, Donn, we've got some more gold medal winners.

06 12 23 45 CMP — Great, who are they?

06 12 23 49 CC Roger. In swimming, the USA set a new record in the men's 400-meter free style relay in

331.7. Also the US women won the 400-meter medley relay in 428.3. That gives us a total of 17 gold medals so far.

06 12 24 18      CMP      Sounds pretty good.

06 12 24 21      CC      Great.

06 12 25 21      CC      Apollo 7, Houston. Opposite omni.

06 12 25 25      CMP      Roger.

06 12 26 33      CC      7, Houston. We plan to run through program 5 over Redstone and power down again over the Canaries this pass.

06 12 26 45      CMP      Okay.

06 12 29 20      CC      Apollo 7, Houston. You ought to be right over typhoon Gloria at this time.

06 12 29 27      CMP      Okay. Thank you. I was looking for it.

06 12 30 02      CMP      I think I see it, Ron. It's just a big mass of white clouds directly beneath me, but I can't get a shot at it. We are not at the right angle.

06 12 30 10      CC      Roger.

06 12 30 17      CMP      Couldn't discern a particular pattern like we could on Hurricane Gladys. Where is Gladys now anyway?

06 12 30 26      CC      It's just about to hit the Florida coast down there kind of west of Tallahassee, I think.

06 12 30 36      CMP      Oh.

06 12 33 18      CC      Apollo 7, Houston. About 1 minute LOS; Redstone at 54.

06 12 33 24 CMP Okay.

06 12 33 27 CC Hey, Donn, just out of curiosity, were you testing the tissues between Redstone and Ascension on the last pass?

06 12 33 37 CMP Was I testing what?

06 12 33 39 CC The tissues.

06 12 33 42 CMP Oh, tissues. No, I was taking a bath, as a matter of fact.

06 12 33 49 CC Okay.

06 12 34 28 CMP Houston, Apollo 7.

06 12 34 30 CC Houston, go.

06 12 34 32 CMP Roger. Would like to advise that the tissues have been tested with a reasonable degree of success.

06 12 34 39 CC Roger.

REDSTONE (REV 99)

06 12 54 55 CC Apollo 7, Houston through Redstone.

06 12 55 01 CMP Roger. Houston, Apollo 7.

06 12 55 04 CC Roger. Loud and clear.

06 12 55 06 CMP Okay.

06 12 56 09 CC Apollo 7, Houston. We're ready for GNC power up.

06 12 56 15 CMP Okay.

06 12 57 34 CC Apollo 7, Houston. Is the urine dump heater still in main A, and have you been cycling it at all?

06 12 57 47 CMP Roger. It's in main A; we haven't touched it that I know of since we took off.

06 12 57 52 CC Roger.

06 12 58 46 CC Apollo 7, Houston. Opposite omni.

06 12 58 52 CMP Roger.

06 13 02 04 CC Apollo 7, Houston. LOS. Canaries at 25.

06 13 02 11 CMP Roger, Ron.

CANARY (REV 100)

06 13 25 35 CC Apollo 7, Houston through Canaries. Standing by.

06 13 27 27 CC Apollo 7, Houston at Canary.

06 13 28 17 CC Apollo 7, Houston.

06 13 28 37 CMP Say again.

06 13 28 40 CC Roger. Apollo 7, Houston. We'll go on CMC power down.

06 13 28 47 CMP Okay.

06 13 30 01 CC Apollo 7, Houston. One minute LOS; Redstone at 28, and you're in your one-hundredth rev.

06 13 30 12 CMP Oh. Roger.

REDSTONE (REV 100)

06 14 28 17 CC Apollo 7, Houston through Redstone.

06 14 30 43 CC Apollo 7, Houston. Opposite omni.

06 14 31 43 CC Apollo 7, Houston.

06 14 31 47 CMP Roger. Go ahead, Bill.

06 14 31 48 CC Hello, Donn. I thought maybe you weren't reading me. I have a flight plan update when you're ready to copy.

06 14 31 54 CMP Okay. Stand by.

06 14 32 15 CMP Go ahead, Bill.

06 14 32 19 CC Roger. If you'll look at page 2 dash 54, at 160 hours plus 25, delete the fuel cell purge.

06 14 32 34 CC Roger.

06 14 32 36 CC At 161 plus 10, DAP update.

06 14 32 58 CMP Okay.

06 14 33 00 CC 162 plus 30, waste water dump. At 163 plus 40, fuel cell O<sub>2</sub> purge.

06 14 33 36 CMP Roger. Fuel cell O<sub>2</sub> purge at 163 plus 40.

06 14 33 40 CC Affirmative. And if you'll look on the next page 2 dash 55, I have a few items there relative to the burn.

06 14 33 48 CMP Okay. Go ahead.

06 14 33 50 CC Right. The nominal time now for burn 5 is 165 hours even. It'll be quads Bravo and Delta for the two-jet ullage, MFC for the last 30 seconds; the burn time will be 66 seconds, and you can delete the reference to battery charging there.

06 14 34 30 CMP Okay. Got quads B and D, 165 on the hour, two-jet ullage, and the burn time is 1 minute and 6 seconds. Is that right?

06 14 34 37 CC Affirmative. And delete the reference to battery charging.

06 14 34 48 CMP Okay. Guess the DELTA-V changed some then, too, didn't it?

06 14 34 53 CC We'll be updating that, and also -- okay. --

06 14 34 57 CMP Okay.

06 14 34 58 CC -- the MIVC's for the last 30 seconds.

06 14 35 02 CMP All right.

06 14 35 06 CC Okay. That does it.

06 14 35 16 CMP Okay.

06 14 35 31 CC Donn, just for your information, the total DELTA-V for that burn is 16 46. It'll be on the PAD when we send it up.

06 14 35 45 CMP Okay.

06 14 35 47 CC Apollo 7, Houston. One minute LOS Redstone; Antigua at 49.

06 14 35 55 CMP Roger. Antigua at 49.  
ANTIGUA (REV 101)

06 14 50 26 CC Apollo 7, Houston through Antigua.  
CANARY (REV 101)

06 14 58 06 CC Apollo 7, Houston through Canary.

06 14 59 34 CC Apollo 7, Houston through Canary.

06 15 02 25 CC Apollo 7, Houston.

06 15 02 31 CMP Roger. Go.

06 15 02 33 CC Roger. Just checking. Now, it's going to be about an hour here. See -

06 15 02 43 CMP Say again, Bill.

06 15 02 52 CC Roger. It's going to be about 45 minutes before next acquisition. I just wanted to get a call from you before we had LOS here at Canary.

06 15 03 00 CMP Yes. Okay. Fine. Everything's fine here.

06 15 03 05 CC Good. Thank you.

06 15 03 10 CMP I've got two sleeping beauties and a sound ship.

06 15 03 13 CC Roger. Donn, how was your sleep last night?

06 15 03 27 CMP Oh, it was pretty good. Not quite as good as the night before.

06 15 03 31 CC Roger.

06 15 03 46 CC We have estimated acquisition Honeysuckle at 43. We'll need the S-band volume up, however; it's sort of a fringe pass.

06 15 03 58 CMP Roger.

06 15 03 59 CC If we don't get you there, we'll get you at the Redstone on the hour, and that will be about an hour from now.

06 15 04 04 CMP Okay.

HONEYSUCKLE (REV 101)

06 15 46 46 CC Apollo 7, Houston through Honeysuckle. Poor contact.

REDSTONE (REV 101)

06 16 02 18 CC Apollo 7, Houston through Redstone.

06 16 02 24 CMP Roger. Houston, Apollo 7.

06 16 02 28 CC Say, Donn, this waste water quantity is getting up pretty high, and we've been taking a look at this; it probably would be a good idea perhaps to dump this stuff before you do any NAV sighting, well before.

06 16 02 44 CMP Yes, that's a good idea. Thanks, Bill.

06 16 02 48 CC And go ahead and do it anytime, I suppose.

Also, when I was updating the flight plan - if you have it there, you'll notice there's still an "H<sub>2</sub> heaters on" at 160 hours and 5 minutes and, of course, I should have had that deleted.

06 16 03 04 CMP Roger. I got that.

06 16 03 07 CC And, one additional item to catch up on, and that's this fuel cell O<sub>2</sub> purge at 163 40. This should be done after the DELTA-V bias test.

06 16 03 24 CMP Oh, okay.

06 16 03 28 CC Thank you.

06 16 03 33 CC Apollo 7, Houston. Opposite omni.

06 16 03 37 CMP Roger.

06 16 04 44 CMP Houston, Apollo 7.

06 16 04 45 CC Go.

06 16 04 47 CMP Roger. I was just looking ahead. This passive thermal control DTO -

06 16 04 53 CC Roger.

06 16 04 55 CMP I'm wondering - if we follow the procedure that's outlined, if we're not going to put ourselves in that undesirable situation where we're pointed straight up, or nearly so, in the lower part of our trajectory - and I'm wondering if it might not be better to simply specify the time in which they want the roll

rate - you know, with the three disks to begin - and let us simply get them a few minutes ahead and then C spelling pitch and yaw at the designated time.

06 16 05 27 CC

Okay. Donn, stand by, and we'll bet that -

06 16 05 28 CMP

- their tight net band for - oh, about 20 minutes before we disable pitch and yaw, and our experience so far indicates that we can do a better job manually in pulse of nulling these pitch and yaw rates anyway.

06 16 05 48 CC

Roger. We've copied that, and we'll take a good look at that.

06 16 05 52 CMP

Okay. I'm afraid if we do it the way it's outlined, it may cost us a fair amount of fuel, and it may screw up the test as well.

06 16 06 07 CC

Roger.

06 16 07 22 CC

Donn, your waste water quantity right now is reading about 88 percent.

06 16 07 29 CMP

Roger. Bill, I think I'll go ahead and dump it now.

06 16 07 32 CC

Right. Thank you.

06 16 09 28 CC

Apollo 7, Houston. One minute LOS Redstone; Antigua at 20.

06 16 09 35 CMP

Roger.

ANTIGUA (REV 102)

06 16 21 23 CC

Apollo 7, Houston through Antigua.

06 16 21 35      CMP      Roger. Houston, Apollo 7.

06 16 21 39      CC      Roger.

06 16 21 49      CMP      Houston, log the CMP 12 clicks on the water gun.

06 16 21 53      CC      Say again the number.

06 16 21 55      CMP      Twelve.

06 16 21 57      CC      Roger. Twelve.

06 16 22 18      CC      Apollo 7, Houston. Opposite omni.

06 16 22 21      CMP      Roger.

06 16 22 41      CC      Donn, we show you down about 53 percent on the waste water, and just bring her right on down to 25 percent.

06 16 22 49      CMP      Okay. Fine. Help me keep an eye on it. Bill, I think I'm going to power up the CMC, the IMU, and everything prior to the next night pass. I was looking ahead here; the burn time now occurs during the night pass which effectively wipes it out as trying to do an alignment, so I'm going to have to start a little early.

06 16 23 13      CC      Okay.

06 16 24 14      CC      Apollo 7, Houston. We will need to send you an update over Carnarvon or Honeysuckle, and that's at about 16 plus 20 nominally, maybe 161 10.

06 16 24 30      CMP      Okay. I'll go ahead and power up everything at 161.

06 16 24 41      CC      Okay.

06 16 26 46      CMP      Houston, Apollo -

06 16 26 49 CC Apollo 7, Houston. Go.

06 16 26 51 CMP Roger. Could you give me a map update, please?

06 16 26 54 CC Roger. Stand by.

06 16 27 25 CC Apollo 7, Houston. Map update for REV 101:  
GET 158 plus 48 plus 46, node at 59.3 west,  
59.3 west.

06 16 27 51 CMP Roger. Thank you.

06 16 27 54 CC And we're coming up on LOS Antigua. We'll pick  
you up at Canaries in about 3 minutes.

06 16 28 01 CMP Okay.  
CANARY (REV 102)

06 16 32 15 CC Apollo 7, Houston through Canary.

06 16 32 19 CMP Roger.

06 16 33 49 CC Apollo 7, Houston.

06 16 33 53 CMP Roger.

06 16 33 54 CC All right, Donn. I'll be giving you a DAP or  
send - yes, giving you a DAP PAD and also a  
maneuver PAD at Carnarvon. That will be about  
161 plus 10, and I'll have a P27 PAD standing  
by. Having a little trouble with our uplink  
at Carnarvon, but that's what we'll be doing  
when we come up on Australia.

06 16 34 19 CMP Okay. I want to try and get a few pictures  
across there, too.

06 16 34 24 CC Okay.

06 16 34 42 CC Hey, Donn, are you exercising?

06 16 34 49      CMP      No, I'm soaking up the water that leaks around the ... when we dump over it.

06 16 34 55      CC      Okay. That answers the question. Our friendly doctor noticed that you must be scurrying around there.

06 16 35 12      CMP      Yes, I am. Every time we dump waste water, we get a big blob of water that leaks out around this fitting we've put on.

06 16 35 30      CC      Yes.

06 16 35 31      CMP      ... without stripping the threads. I think the problem is that there is no gasket or washer in it.

06 16 35 40      CC      Yes. Must be quite a nuisance.

06 16 35 46      CMP      Yes. At least, we don't have to do it very often.

06 16 38 24      CC      Apollo 7, Houston. One minute LOS Canaries. I'm going to give you a call in a couple of minutes at AOS Madrid just to check the S-band, so we need the volume up.

06 16 38 56      CC      Apollo 7, Houston. S-band volume up.  
CARNARVON (REV 102)

06 17 07 55      CC      Apollo 7, Houston.

06 17 08 03      CMP      Roger. Houston, Apollo 7.

06 17 08 05      CC      Roger. I have a DAP data update and also a maneuver PAD, and if you'll go to FOO and ACCEPT, we'll send up your new state vector.

06 17 08 19      CMP      Roger. Going to ACCEPT.

06 17 08 24      CC      Okay. Now, Donn, I have the DAP data update. Of course it is brief, and the maneuver PAD will take a little while. You mentioned that you wanted to get some pictures over Australia so - sort of - you might take a look at that and either delay your readback or ask me to delay sending it to you.

06 17 08 47      CMP      All right, Bill.

06 17 08 50      CC      Ready to copy?

06 17 08 53      CMP      All right. I get you. Why don't you give me the DAP data?

06 17 08 55      CC      Okay. DAP data: minus 00078 minus 0049 plus 02142. Read back.

06 17 09 23      CMP      Minus three balls 78 minus two balls 49 plus 02142.

06 17 09 29      CC      Readback is correct. I'm ready to give you the maneuver PAD when you're ready.

06 17 09 34      CMP      Okay. I think I'll hold up here and get some pictures.

06 17 09 38      CC      Okay. Just let me know when you're ready to copy; and if we run to LOS of Carnarvon, be sure to turn your volume up before Honeysuckle. We'll have Honeysuckle acquisition at about 15.

06 17 09 52      CMP      Okay.

06 17 12 05      CC      Apollo 7, Houston. No need to acknowledge right now, but you've got a GO for a 121 dash 1.

06 17 12 13      CMP      Roger. Thank you.

06 17 13 07      CC      Apollo 7, Houston. You might check your attitude right now

06 17 13 13      CMP      Okay. Roger.

06 17 13 15      CC      And we're coming up on LOS Carnarvon in about 45 seconds; S-band volume up at 15.

06 17 13 22      CMP      Roger.  
HONEYSUCKLE (REV 102)

06 17 16 14      CC      Apollo 7, Houston.

06 17 16 39      CC      Apollo 7, Houston through Honeysuckle.

06 17 17 05      CC      Apollo 7, Houston through Honeysuckle.

06 17 17 31      CMP      Houston, Apollo 7.

06 17 17 33      CC      Roger. How do you read, Donn?

06 17 17 35      CMP      Loud and clear.

06 17 17 37      CC      Okay. Let me know when you're ready to copy the maneuver PAD. And, also, with the previous DAP data update, that was for NOUN 48.

06 17 17 49      CMP      Roger. Understand.

06 17 17 51      CC      And let me know when you're ready to copy the maneuver PAD.

06 17 17 56      CMP      Okay. You can go ahead now.

06 17 18 02      CC      Roger. And before I start, your state vector and target loads are in. Starting to read for SPS 5 slash FUGS, 16500 0000 plus 01110 plus 16300 plus 02034 2406 plus 0898 17280 29494 minus 078 minus 049 106 34 3548 201 164 18 0000

minus 3062 plus 11248 1239 000 000 000. Standing by for readback.

06 17 20 01      CMP      Roger. SPS 5 slash FUGS 16500 0000 plus 01110 plus 16300 plus 02034 2406 plus 0898 17280 29494 minus 078 minus 049 106 34 3548 201 164 18 0000 minus 3062 plus 11248 1239, and all balls for attitude.

06 17 20 45      CC      Roger. And for the attitude, it's out of plane, south, heads up. The NAV check - stand by - comments: MFVC takeover at TIG plus 36 seconds. Additional comments: manual cut-off at DELTA-V counter equal 100 feet per second, sextant star not visible after 164 plus 41. Also. if needed, your R, P, and Y align are 171, 260, 014.

06 17 21 54      CMP      Say, I ran out of room to write. What were those numbers again - the backup alignment?

06 17 22 00      CC      For roll, roll is 171, pitch is 260, yaw 014.  
REDSTONE (REV 102)

06 17 37 25      CC      Apollo 7, Houston through Redstone.

06 17 37 30      CMP      Roger, Bill.

06 17 37 35      CC      Roger. I'd like to clarify one item in the comments regarding the bias: the manual cut-off at DELTA-V counter equalled 100 feet per second. I read it as one-zero-zero and just wanted to make sure that you understood there's not a decimal point there.

06 17 38 08      CMP      Roger. I get you. You've deliberately loaded in a bigger number, and we cut off at a plus number manually by throwing the switch down, right?

06 17 38 15      CC      That's affirmative, but it's 100 and not 10.

06 17 38 20      CMP      Right. I've got you.

06 17 38 22      CC      Also, you did get the R, P, and Y align?

06 17 38 28      CMP      Roger. I'll get that a little later. I'm right in the midst of an alignment here.

06 17 38 31      CC      Okay. Sorry to have bothered you.

06 17 38 33      CMP      No sweat. I plan to align this thing without mapping out the range, and boy, it's really wheeling around.

06 17 41 05      CC      Apollo 7, Houston. One minute LOS. When it's convenient, you can go to BLOCK on your TM.

06 17 41 16      CMP      Roger.

                 MILA through BERMUDA (REV 102)

06 17 52 33      CC      Apollo 7, Houston through MILA.

06 17 52 37      CMP      Roger. Houston, Apollo 7.

06 17 52 50      CMP      Bill, shortly after I left you and even while we were talking there, I ... the P51 and then do the P30 targeting - P40 and got a P52 alignment. I'd like to go through that at least one more time on a subsequent night pass, but as of right now, we're in pretty good shape on alignments.

06 17 53 10 CC Wal, I got the word that they took a look at the numbers over Redstone, and they looked very favorable.

06 17 53 17 CMP You mean the numbers on the computer?

06 17 53 18 CC Roger.

06 17 53 20 CMP Very good.

06 17 53 21 CC Also, I would like to check one thing if you'll get the maneuver PAD.

06 17 53 27 CMP Got it right here.

06 17 53 28 CC Roger. The trunnion - trunning is 201.

06 17 53 50 CMP ... too, did you not?

06 17 53 52 CC You read it back. I'm pretty sure you read it correctly; I just wanted to confirm. It sounded - I wasn't too sure about the first number, and so that's about two-thirds of the way down the PAD there, 201 for the trunnion.

06 17 54 07 CMP Oh, yes. ... star alignments.

06 17 54 12 CC Would you say that again, please?

06 17 54 15 CMP ... backup alignment numbers - that was ...

06 17 54 19 CC Oh, yes. Well, I just sent those up because this was an important burn, and it was 171, 260, and 014 for the roll, pitch, and yaw align.

06 17 54 34 CMP Okay. Thank you. In case ... or something, I might have to use those at the last minute; I don't think it will happen, but --

06 17 54 42 CC Okay.

06 17 54 44      CMP      What I got to watch out for now is the fact we're lined up out of plane and this thing likes to fly inplane.

06 17 54 50      CC      Roger.

06 17 56 55      CC      Apollo 7, Houston. We still show you in ACCEPT.

06 17 57 01      CMP      Roger. Thank you.

06 17 57 12      CC      Also, Donn, I have a block data to read up. You're probably coming out of nighttime now, and to keep from having to give this to you over Carnarvon - you'll be coming up on nighttime pass - I'd like to get that to you as soon as possible, and then leave you free to use as much of the nighttime as possible on the next nighttime pass.

06 17 57 32      CMP      Good thinking. I'll get the block data out.

06 17 58 25      CMP      Go ahead with your block, Bill.

06 17 58 27      CC      Roger. Before I start, I'd like to verify you have loaded the DAP with the DAP data update I gave you.

06 17 58 38      CMP      That's right.

06 17 58 39      CC      Roger. Okay. Starting to read block data.  
105 dash 1 Alfa plus 314 minus 0627 164 46 06  
3446, 106 dash 1 Alfa plus 286 minus 0631 166  
21 55 3485, 107 dash 4 Alfa plus 283 minus  
1625 168 59 03 3038, 108 dash 4 Alfa plus 302  
minus 1625 170 40 38 2787, 109 dash 4 Alfa

plus 275 minus 1625 172 22 48 3072, 110 dash  
3 Alfa plus 299 plus 1390 173 34 54 2890.

Standing by for readback.

MILA through BERMUDA (REV 103)

06 18 01 21 CMP Roger. 105 dash 1 Alfa plus 314 minus 0627  
164 47 06 3446, 106 dash 1 Alfa plus 286 minus  
0631 166 21 55 3485, 107 dash 4 Alfa plus 283  
minus 1625 168 59 03 3038, 108 dash 4 Alfa plus  
302 minus 1625 170 40 38 2787, 109 dash 4 Alfa  
plus 275 minus 1625 172 22 48 3072, 110 dash 3  
Alfa plus 299 plus 1390 173 34 54 2890.

06 18 02 26 CC Roger. Readback correct. Coming up on LOS;  
we'll have Canaries at 05.

CANARY (REV 103)

06 18 05 53 CC Apollo 7, Houston through Canary.

06 18 05 57 CMP Roger.

06 18 06 50 CC Donn, you might be interested: the S-IVB is  
just a bit ahead of you at about 400K, on the  
east coast Africa.

06 18 07 02 CMP Oh, yes?

06 18 07 04 CC It's coming in.

06 18 07 07 CMP Oh, it's coming in? Adios, big moose.

06 18 07 31 CMP Houston, Apollo 7.

06 18 07 33 CC Go.

06 18 07 36 CMP I think you need to give us a little advice  
along the way on these RCS quads. I'm going

to switch them. I've already switched C, and I suspect A is getting down in that direction, perhaps B and D also.

06 18 07 48 CC Roger. Stand by.

06 18 07 50 CMP I don't want to switch them until we have to, but I'd like you to help out.

06 18 07 53 CC Okay.

06 18 09 13 CC Apollo 7, Houston. You're riding comfortable above on Bravo and Delta. You're getting fairly close to A, about 5 to 6 pounds above, and we'll keep you advised on that just like we did on Charlie quad.

06 18 09 28 CMP Roger. Thank you.

06 18 09 38 CC Roger. And you might check attitude again there.

06 18 09 43 CMP Roger. It's getting close.

06 18 09 45 CC Roger.

06 18 09 46 CMP I'll try not to fire any thrusters.

06 18 12 10 CC Apollo 7, Houston. We're about 1 minute and a half here until LOS, and we're transmitting through S-band. How do you read?

06 18 12 18 CMP I read you fine, Bill.

06 18 12 20 CC Okay. Good. Thank you.

06 18 12 47 CMP Houston, Apollo 7.

06 18 12 48 CC Go.

06 18 12 50 CMP Roger. Bill, could you find out exactly how many frames we have in this big set camera pack? Nominal number is something like 165.

We appear to have more than that. I just wondered if anybody down there knows exactly how many.

06 18 13 06 CC I'll check. I'll try and get the word to you, but we're coming up on LOS.

06 18 13 10 CMP Well, whatever is convenient; no rush on it.

06 18 13 18 CC We're checking.

06 18 13 31 CC Apollo 7, Houston. We'll have Carnarvon at 40.  
CARNARVON (REV 103)

06 18 40 28 CC Apollo 7, Houston through Carnarvon.

06 18 40 40 CMP Roger. Houston, this is Apollo 7.

06 18 40 43 CC Roger. Say, in reference to the passive thermal control test: we would still like to perform the test as per the procedure. A couple of points of clarification: the time of initiation is selected to get MAX time above 200 miles with channels disabled; also, the time to initiate attitude hold is 10 minutes past perigee so we shouldn't have too much of a problem there on the drag.

06 18 41 22 CMP Okay. If you say so. We'll give it a whirl; if it's too bad, we'll probably have to modify a little bit going up.

06 18 41 30 CC Okay. And in that regard, there'll be two more of those tests, and they say if this is too expensive in fuel that we can just take a look

at one of the two other tests that are coming up. We may just scrub one of those.

06 18 41 51      **CMP**      But I'd strongly suggest that if we get good results out of the first one.

06 18 41 55      **CC**      Well, they don't anticipate too much of a problem, but we'll just adopt a wait-and-see attitude on that one.

06 18 42 02      **CMP**      Roger. Understand.

06 18 42 04      **CC**      Also, in reference to your question on the cassette: I've checked into this, and there are 165 frames MAX in there, and I asked them if you kept cranking what happened. Apparently, it just keeps turning, so you're not taking any more pictures after that.

06 18 42 22      **CMP**      Oh, no, you've got to be kidding. Okay. Thank you for the dope.

06 18 42 28      **CC**      Right. Also, just for your information, on your pass over the States after the burn, you will be visible over Houston.

06 18 42 37      **CMP**      Roger. Understand.

06 18 42 39      **CC**      Just before sunrise.

06 18 42 50      **CC**      I'm sorry, Donn; that's before the burn.

06 18 42 55      **CMP**      Roger. Understand.

06 18 43 20      **CC**      Say, Donn, how did the EMS DELTA-V test work out?

06 18 43 25      **CMP**      We haven't done that yet, Bill.

O 06 18 43 27 CC Okay.

06 18 43 30 CMP Houston, Apollo 7.

06 18 43 32 CC Roger. Go.

06 18 43 34 CMP Roger. Just got a picture of Carnarvon.

06 18 44 36 CC Good.

06 18 44 50 CC Apollo 7, Houston. O<sub>2</sub> tanks 2 fans ON 3 minutes, then OFF.

06 18 46 12 CC Apollo 7, Houston. Did you copy me on the O<sub>2</sub> tank 2 fans?

06 18 46 20 CMP Roger, Bill.

06 18 46 22 CC Okay. And in about 2 minutes, we'll have LOS Carnarvon, and we'll require S-band volume up for Honeysuckle.

U 06 18 46 30 CMP Roger. Understand, Bill. And we just took three pictures, frame 3, 4, and 5 on magazine R of Shark's Bay, Carnarvon, and a terrain feature in Australia.

06 18 46 42 CC Okay.  
HONEYSUCKLE (REV 103)

06 18 49 24 CC Apollo 7, Houston.

06 18 49 40 CC Apollo 7, Houston.

06 18 49 49 CC Roger. I've just been advised we're monitoring your condenser temperature on fuel cell number 2 at 174 degrees. This is 10 degrees higher than the other; there is a limit of 176 for alarm indication so you may get a light on that, but we are

O

watching it, and there is no cause for undue concern now.

06 18 50 15      CMP      Roger. You say if it goes up to 176 not to sweat it.

06 18 50 18      CC      Roger. You get a light.

06 18 50 20      CMP      Right. I know; but we don't have to get excited about that?

06 18 50 23      CC      Roger.

06 18 50 24      CMP      Okay.

06 18 55 32      CC      Apollo 7, Houston. One minute LOS Honeysuckle; Guaymas at 20.

06 18 55 40      CMP      Roger.

## GUAYMAS through ANTIGUA (REV 103)

06 19 20 57      CC      Apollo 7, Houston through Guaymas.

06 19 21 00      IMP      Roger, Houston. Good morning, Bill.

06 19 21 03      CC      Good morning; how are you today?

06 19 21 05      IMP      Not bad. Say, I wonder if you could give me a readout on my fuel cell radiator 2 inlet and outlet test, please. Give me the trend for the last several hours.

06 19 21 15      CC      Roger. We're doing that very thing right now.

06 19 21 21      IMP      We do have a partial warning light on, and it's reading about 177 or 178 on the condenser exhaust; the skip temperature has crept on up to about 435.

06 19 21 34      CC      Roger. Our last reading on the fuel cell was 174, and that was at 48 over Carnarvon.

06 19 21 45 IMP Roger. I'm wondering about - if we get that trend, I'm sure you think it's probably a cooler pump failure, also. The other question I have is should we give some thought to open circuiting the fuel cell now and throwing it on, letting it cool down a bit, putting it on just before the burn?

06 19 22 02 CC That's exactly our line of thinking; we'll get back to you on that just as soon as we take a closer look at the data here.

06 19 22 11 IMP Okay.

GUAYMAS through ANTIGUA (REV 104)

06 19 26 18 CC Apollo 7, Houston.

06 19 26 21 IMP Go ahead, Bill.

06 19 26 18 IMP Go ahead, Bill.

06 19 26 20 CC Roger. In regard to your first request, we're still working on the trend. I told them to go back about two orbits. We suggest you open circuit the fuel cell and put it back on line at 164 plus 45. That's 15 minutes prior to the burn. Two fuel cells can handle the loads; however, the bus voltage is going to be about 26.5 to 26.6.

06 19 26 58 IMP Roger. I concur. Say again the time for putting them back on.

06 19 27 00 CC At 164 plus 45; that's 15 minutes prior to the burn.

06 19 27 09 IMP Right.

○ 06 19 27 18 IMP Got a morning report for you, Bill.

06 19 27 21 CC Okay.

06 19 27 22 IMP Partial pressure O<sub>2</sub> still 245 mm of mercury, so it looks like it's holding there. I'll knock off giving you those readings any more; I might take one the last morning. IMP 15 clicks of water this morning. I had 6 and 1/2 hours, maybe 7 hours of sleep. CDR had 4 and 1/2 hours of good sleep last night.

x 06 19 27 50 CC Roger. Understand. IMP 15 clicks of water, 6 and 1/2 to 7 hours of sleep, and the CDR 4 and 1/2 hours of good sleep. Also, Walt, you can turn the CRYO O<sub>2</sub> tanks - tank fans off, tank 2 fans off.

⊖ 06 19 28 08 IMP They're off. Been off awhile.

06 19 28 10 CC Thank you.

06 19 28 16 CDR Good morning, Bill.

06 19 28 17 CC Good morning, Wally. How's everything?

06 19 28 19 CDR Very good. Haven't heard you in awhile.

06 19 28 21 CC No, I've been on the off period here, I guess.

06 19 28 25 CDR Yes, they're trying to move us up earlier each day.

06 19 28 28 CC Right.

06 19 28 30 IMP Understand you're a big TV fan of ours.

06 19 28 33 CC That's right. I've been running home from work just in time to watch.

○

06 19 28 56 CDR Thought for today we were going to try for an Emmy for the best weekly series.

06 19 29 02 CC I thought you were going to try for a Hammy.

06 19 29 03 CDR Emmy.

06 19 29 04 CC Right.

06 19 29 05 CDR Oh, you're coming back. I lost it. That's one for you.

06 19 29 10 CC (laughing) That's a rare one.

06 19 29 41 CDR That makes up for the involuntary "Oh, Boy" you gave us, anyway.

06 19 29 44 CC Roger.

06 19 30 32 CC Apollo 7, Houston. At the risk of belaboring the point, we'd like to confirm O<sub>2</sub> tank 2 fans OFF and heaters AUTO.

06 19 30 46 IMP Fans are off and the - I have one heater here on. Was that called ON during the night?

06 19 30 54 CC Negative. That should be -

06 19 30 58 IMP Okay. The fan is off.

06 19 31 04 CC Okay. For O<sub>2</sub> tank 2, the fans should be off and the heater in AUTO.

06 19 31 09 IMP Roger. Understand. I'm going to turn the fan on for 5 minutes. I had it off here. Looks like we may have had a heater go inadvertently ON instead of AUTO.

06 19 31 22 CC Okay.

06 19 33 06 CC Apollo 7, Houston.

06 19 33 09 IMP Go ahead, Bill.

06 19 33 10 CC Roger. You might tell Donn apparently he's trying to load that NOUN 48 there and having trouble in register 2. He's putting in a minus 49; and when he's checking it, it's coming back a 50. They say that's because of scaling into and out from.

06 19 33 27 CMP Roger. I was having fun with that. If you put in a 49, it adds one; and if you put in a 48, it subtracts one. There's no way to get 49 on there.

06 19 33 37 CC They say that when you put the 49 in and enter it, it's okay.

06 19 33 43 CMP Yes, it's all right.

06 19 33 44 CC Okay.

06 19 33 47 CMP I was just having fun with it.

06 19 34 09 LMP Hey, Bill, notice how quickly our condenser exhaust temperature started coming down.

06 19 34 12 CC Yes, it's coming right down.

06 19 34 55 LMP Hey, Bill, I'm thinking of manually balancing the hydrogen tanks right after the burn.

06 19 35 00 CC Okay.

06 19 35 03 LMP I'd like to have what you guys read out as quantities in H<sub>2</sub> 1 and H<sub>2</sub> 2.

06 19 35 12 CC Stand by.

06 19 35 38 CC Walt, we're reading 42.6 in number - H<sub>2</sub> number 1 and 39.2 in H<sub>2</sub> number 2.

0 06 19 35 49 IMP Roger. I'll balance it after the burn. Tell Rita Rapp that ham and applesauce is a great dish.

06 19 35 59 CC Roger. Ham and applesauce. We're coming up on LOS; we'll have Canaries at 39.

06 19 36 09 CDR As far as CDR's concerned, steak and eggs are better.

06 19 36 12 CC Amen.

06 19 39 48 CC Apollo 7, Houston through Canary.

06 19 39 51 IMP Roger. Loud and clear, Bill.

06 19 39 53 CC Roger. Have you done the EMS DELTA-V bias test yet?

06 19 39 58 CDR Okay.

⊖ 06 19 40 00 CC And as soon as you have finished with that, we would like a fuel cell O<sub>2</sub> purge on all three.

06 19 40 07 IMP Roger. I'm going to go ahead and do that now.

06 19 40 11 CC Well, we thought maybe that - no, I guess it wouldn't hurt anything.

06 19 40 17 CC Roger.

06 19 41 00 CC Apollo 7, Houston. I have an update for the passive thermal control tests. However, if you are busy, we can hold off for awhile.

06 19 41 09 IMP Go ahead, Bill.

06 19 41 10 CC Roger. Passive thermal control, T zero 166 plus 50, T align 167 plus 16, attitude is 000. And that's it.

○

○ 06 19 41 35 IMP Roger. T zero 166 050, T align 167 plus 16, roll zero, pitch zero, yaw zero.

06 19 41 42 CC Readback is correct.

06 19 41 46 CDR Bill, did anybody take into consideration our perigee torquing on that alignment?

06 19 41 53 CC Yes, we had quite a discussion on that, Wally. And it turns out that - you spin this thing up about 10 minutes past perigee and go in attitude hold. They're willing to pay any penalty to get that thing set up for this so that you will be in the proper attitude at the proper roll rate as you go above 200 miles. If they use too much fuel on this, then they are willing to do away with one of the - or both of the other tests.

⊖ 06 19 42 22 CDR Okay. Let's have all of the DTO guys get together in a huddle and add up their willingness to spend fuel and see if it meets our budget.

06 19 42 33 CC Roger. Well, that's what we have already done, and they say they are willing to accept a cancellation of one or both of those later tests in order to get this done the way it is written out.

06 19 42 45 CDR Okay. That's fair enough. I think we all - it's a new thing to all of us up here, and I think we should be aware of it.

○ 06 19 42 53 CC Roger.

06 19 42 54 CDR I'm not complaining or anything there. It's a phenomenon that's going to hurt us every time. I'm explaining it right now, in fact.

06 19 42 59 CC Roger.

06 19 43 00 CDR I think I got advantage of it this time. It is driving me to the right attitude.

06 19 43 06 CC Good.

06 19 45 57 CC Apollo 7, Houston. Coming up on LOS Canary. We may be able to get you at Tananarive at 01. Also, we would like the BIOMED to CDR, and note we have lost CMP EKG; request check harness.

06 19 46 19 LMP Lost CMP EKG. Roger. You notice that my main bus voltage, Bill, is running right at 26 volts down here; it's going to trigger these lights on and off.

06 19 46 30 CC Roger. I just checked on that a minute ago, and we were reading 26.9. Let me check again, here. 26.7 to 26.6 we're reading here, Walt.

06 19 46 42 LMP Okay. Well, it triggered off the master alarm a little bit ago, and I'm reading right at 26 on the onboard meter.

06 19 46 47 CC Thank you very much.

06 19 47 03 CDR Bill, what about the change of coolant pump?  
TANANARIVE (REV 104)

06 20 03 41 CC Apollo 7, Apollo 7 through Tananarive. Over.  
CARNARVON (REV 104)

06 20 14 26 CC Apollo 7, Houston through Carnarvon.

05 20 14 32 CDR Roger. Loud and clear. The EMS bias test for the duration of the burn plus 30 seconds, which is when we turn it on, is 0.3 feet per second.

06 20 14 42 CC Roger. 0.3.

06 20 14 46 CDR That's a minute and 36 seconds.

06 20 14 57 CC Bill, I would like to have you go over again what you have proposed for the DELTA-V counter setting on this burn.

06 20 15 07 CC Okay. The DELTA-V counter setting will be 1728.0. What this does - it is 100 feet higher than the DELTA-V that you want to get, and you will turn the thrust switches off at 100.0 indication on the DELTA-V<sub>C</sub> counter, in other words, with a hundred feet remaining.

06 20 15 35 CDR What is the reasoning behind that? The thing is built to turn itself off at zero. That's one of our primary checks on the SCS cutoff on the DELTA-V counter.

06 20 15 46 CDR I'll turn it off if it doesn't turn itself off at zero. This is a complete departure from the way we normally use the DELTA-V counter and the SCS technique.

06 20 15 59 CC Roger. That is correct. However, the DTO calls for this as part of the test. I think it's in that little burn sheet on the inside cover of the flight plan.

○ 06 20 16 10 CDR The DFO is wrong, then.

06 20 16 19 CDR The DELTA-V cutoff in the DFO, as I see it - we've looked at it - says cutoff through thrust switches. I don't think enough people understand the EMS. I found that out as soon as we got it on board.

06 20 16 40 CC Walt, are you there?

06 20 16 45 LMP I'm here.

06 20 16 49 CC Roger. We need fuel cell number 2 back ON at 164 plus 30. That's 30 minutes prior to the burn, instead of the 15 that I gave you.

06 20 16 57 LMP Okay. I'll do that, but it looks to me like it's going to - that will give us just about enough time to get up the alarm stage again. Donn is still reading 170 about on the condenser exhaust and 430 on the skin.

⊖ 06 20 17 11 CC Let me see if I can get a compromise here.

06 20 17 14 LMP Okay. I'll do - I'll go with whatever you guys want, but I would like to make sure we aren't jumping the gun. Also, I would like to know what your trim data shows on those radiators, so I will know whether to turn the pumps off or not.

06 20 17 25 CC Roger. Stand by. I've asked for that. It's still in process.

○ 06 20 17 30 LMP Okay. Standing by.

06 20 17 52 CDR Bill, you do understand the normal cutoff at a DELTA-V? That's what it's for. It will beat me any time.

06 20 17 58 CC Roger. I understand that. In fact, the way I had understood this was that you were using the thrust switches to turn it OFF just to check them. It's part of a --

06 20 18 07 CDR They better work; that's all we've got. They got three modes of cutoffs: G&N cutoff, DELTA-V counter going through zero, and then DELTA-V thrust switches. And I'm convinced that they must work, or I wouldn't be up here.

06 20 18 23 CC Right. This was a late change, Wally, and you have a 100 foot per second there to play with, so to speak. If they don't cut if off, then the DELTA-V will cut it off.

06 20 18 34 CDR Roger. That's a late change to everything then; that is not the way we've been doing burn 5. And it says nothing about biasing the DELTA-V counter 100 feet per second. We've never done it. I'm hair-triggered for zero.

06 20 19 25 CDR Hey, Bill.

06 20 19 26 CC Go.

06 20 19 28 CDR I guess you have raised something in my mind. We did have an SCS burn where the DELTA-V counter did cut off, didn't we?

06 20 19 34 CC Roger. That is affirmative.

06 20 19 35 CDR Okay. Let's bias it about, say 50 feet. I don't want to throw another 100 feet per second on this beauty.

06 20 20 10 CC Wally, 50 feet bias - feet per second bias is okay.

06 20 20 14 CDR Okay.

06 20 20 55 CC Apollo 7, Houston. One minute LOS Carnarvon; Honeysuckle at 22; S-band volume up.

06 20 21 14 CC Apollo 7, Houston. You might check the fans, might still be ON, O<sub>2</sub> tank 2.

HONEYSUCKLE (REV 104)

06 20 23 08 CC Apollo 7, Houston through Honeysuckle.

06 20 23 12 CDR Loud and clear.

06 20 23 14 CC Roger. Did you get my call to check the O<sub>2</sub> tank 2 fans? We are monitoring them still ON.

06 20 23 20 LMP I did, and I think you'll find them OFF now.

06 20 23 22 CC Roger.

06 20 24 00 CC Apollo 7, Houston. Subsequent to our conversation on this DELTA-V setting, I just want to confirm that the setting will now be 1678.8.

06 20 24 14 CDR Roger. We'll set it now.

06 20 24 15 CC Thank you.

06 20 26 23 CC Apollo 7, Houston. A few minutes ago, you gave me the drift for the EMS DELTA-V bias test as 0.3 and 1 plus 36 seconds. I just wonder if I could get a readout of residuals from the EMS DELTA-V test.

06 20 26 59 CC Apollo 7, Houston.

06 20 27 13 CC Apollo 7, Houston.

06 20 27 17 LMP The fuel cell condenser - looking at the condenser exhaust temperature of fuel cell 1 now, and the skin temperature, also.

06 20 27 31 IMP But I do have fuel cell 2 back on the lines.

06 20 27 34 CC Roger. Thank you.

06 20 28 05 CC Apollo 7, Houston. Request a readout on the residuals from the EMS DELTA-V test.

06 20 28 13 CDR I ran the EMS DELTA - DELTA-V test is minus 21.7.

06 20 28 18 CC 21.7. Thank you.

06 20 28 22 IMP Hey, Bill, fuel cell 1 has got a skin temperature of about - between 435 and 440, and the condenser exhaust temperature is 178, it looks like now.

06 20 28 37 CC Roger. We are reading slightly lower than that, but we are watching it.

06 20 28 42 IMP Okay. It seems to start coming down after I put two on the line, but I can't figure it out in regard to condenser exhaust temperature.

06 20 28 50 CC We are studying the problem, too.

06 20 28 57 CC Okay. We show number 1 coming, starting to come down slightly. We're about 1 minute from LOS Honeysuckle; Guaymas at 51 - excuse me, Huntsville at 47.

## HUNTSVILLE (REV 104)

06 20 48 24 CC Apollo 7, Houston through Huntsville.

06 20 50 23 CDR Houston, do you read?

06 20 50 25 CC Apollo 7, Houston. Go.

06 20 50 27 LMP Roger. Bill, I just wanted to report the sextant star check was within a couple of tenths of a degree: very good.

06 20 50 34 CC Roger. Within two-tenths of a degree. Thank you.

06 20 50 36 LMP Right.

06 20 50 39 CC You have about 1 minute and -

06 20 50 40 LMP On the alignment - this was a couple of hours ago - on the initial alignment, the gyro torquing angles were 1 degree, 2 degrees, and 3 and 1/2 degrees, respectively.

06 20 50 51 CC Roger. One degree, 2 degrees, and 3 and 1/2 degrees.

06 20 50 55 LMP Right. That was after the coarse align to the burn attitude. And at the fine align, torque angles were very small.

06 20 51 01 CC Roger. Fine align very small. I have an advisory regarding the burn, relating to the fuel cell operation. Number 1: make the burn with three fuel cells on line, of course, if at all possible. Number 2: it's okay to make the burn with two fuel cells; it would cost less than 1 ampere hour on the batteries. Number 3: if the

condenser temperature exceeds 200 degrees F,  
remove that fuel cell from line except during  
the burn.

06 20 51 42 IMP Roger.

06 20 51 49 CC Walt, how are the fuel cells looking now?

06 20 51 57 CDR Roger that.

06 20 53 06 CT Huntsville LOS.

GUAYMAS through ANTIGUA (REV 104)

06 20 53 49 CC Apollo 7, Houston through Guaymas.

06 20 53 49 CDR Roger. On Guaymas.

06 20 54 12 CC Apollo 7, Houston. I'll give you a time check  
at 5 minutes.

06 20 54 16 CDR Roger.

06 20 54 45 CC Fifteen seconds.

06 20 54 48 IMP All SCS circuit breakers CLOSED.

06 20 54 50 CDR CLOSED.

06 20 54 51 IMP Circuit breakers for gimbal motor control, four  
CLOSED.

06 20 54 54 CDR One, two, three, four CLOSED.

06 20 54 56 CC Five, four, three, two, one.

06 20 55 00 CC MARK.

06 20 55 01 CC Five minutes.

06 20 55 02 CDR Roger. Right on.

06 20 55 03 IMP One roll channel ENABLED.

06 20 55 05 CDR Okay. AC OFF.

06 20 55 07 IMP Direct RCS OFF.

06 20 55 08 CDR Direct OFF.

06 20 55 09 LMP EMAG to RATE 2.

06 20 55 14 LMP Spacecraft control, CMC AUTO.

06 20 55 16 CDR CMC AUTO.

06 20 55 17 LMP SCS TVC pulse RATE COMMAND.

06 20 55 20 CDR RATE COMMAND.

06 20 55 24 LMP TVC gimbal drive, pitch and yaw AUTO.

06 20 55 26 CDR AUTO, AUTO.

06 20 55 27 LMP TVC SERVO power, one and two ON.

06 20 55 32 CDR One ON, two ON.

06 20 55 33 LMP Tape controller power, one.

06 20 55 35 CDR One.

06 20 55 36 LMP Rotational hand controller two, ARMED.

06 20 55 39 CDR ARMED.

06 20 55 44 LMF MAIN bus ties are both ON; gimbal motor pitch  
one, yaw one.

06 20 55 48 CDR Pitch one, START.

06 20 55 49 LMP ON.

06 20 55 51 CDR Yaw one, START.

06 20 55 52 LMP ON.

06 20 55 54 LMP Translation handcontroller, clockwise.

06 20 55 56 CDR Clockwise.

06 20 55 57 LMP Verified 0 MFVC.

06 20 56 00 CDR Negative MFVC.

06 20 56 01 LMP Pitch two, yaw two.

06 20 56 03 CDR Pitch two, START.

06 20 56 04 LMP ON.

06 20 56 05 CDR Yaw two, START.

06 20 56 06 LMP ON.

06 20 56 08 LMP Confirm and set GTI trim.

06 20 56 11 CDR Seven 8 and 49 minus ...

06 20 56 14 LMP Verify MIVC.

06 20 56 19 CDR GO.

06 20 56 20 LMP THC NEUTRAL.

06 20 56 21 CDR NEUTRAL.

06 20 56 23 LMP Handcontroller power, BOTH.

06 20 56 24 CDR BOTH.

06 20 56 25 LMP Do your trim maneuver.

06 20 56 39 CDR Trim maneuver GO.

06 20 56 42 LMP Okay. Direct RCS ON.

06 20 56 45 CDR Direct ON.

06 20 56 49 LMP Were trimmed?

06 20 56 51 LMP BMAG.

06 20 56 52 LMP Manual attitude - excuse me - RATE COMMAND.

06 20 56 55 CDR Verify.

06 20 56 56 LMP BMAG's to rate, ATT-1/RATE 2.

06 20 56 58 CDR Three, ATT-1/RATE 2.

06 20 57 09 LMP ENTER.

06 20 57 11 LMP Gimbal trims coming up.

06 20 57 13 LMP Pitch up.

06 20 57 14 CDR Pitch down.

06 20 57 15 CDR Zero, zero, zero, zero.

06 20 57 24 LMP Standing by for 2 minutes.

06 20 57 28 CDR ... Okay. It looks good.

06 20 57 45 CC Apollo 7, Houston. On my mark, 2 minutes.

06 20 57 48 CDR Roger.

06 20 58 00 CC MARK.

06 20 58 01 CC Two minutes.

06 20 58 02 CDR Roger. With you.

06 20 58 04 CDR Two minutes.

06 20 58 05 LMP FDAI scale, 5/5.

06 20 58 08 CDR Five-five.

06 20 58 09 LMP DELTA-V thrust A and B, NORMAL.

06 20 58 10 CDR A NORMAL, B NORMAL.

06 20 58 15 LMP Handcontrollers ARMED.

06 20 58 19 CMP Number 1 is ARMED.

06 20 58 22 CDR Two, ...

06 20 58 24 LMP GDC align.

06 20 58 34 LMP Standing by for 30. We have plus voltage auxiliaries. Circuit breakers are in on 277. Flight qual recorder going ON at 30 seconds.

06 20 58 41 CC Roger.

06 20 59 19 LMP Flight QUAL recorder going ON now.

06 20 59 27 LMP G&S to DELTA-V in AUTO.

06 20 59 30 CC Twenty seconds.

06 20 59 31 LMP Ullage in 20 seconds.

06 20 59 35 LMP DELTA-V<sub>M</sub> counting.

06 20 59 41 CDR Ullage COMMENCE. DELTA-V counting.

06 20 59 50 CC Ten seconds.

06 20 59 51 CDR Roger.

06 20 59 55 CC Five, four, three, two, one.

GUAYMAS through ANTIGUA (REV 105)

06 21 00 00 CC Ignition.

06 21 00 01 CDR Starting.

06 21 00 04 LMP Four balls out.

06 21 00 05 CDR Yabadabado!

06 21 01 28 LMP DELTA-V thrusters A and B, OFF.

06 21 01 30 CDR They're OFF.

06 21 01 35 LMP Gimbal motors are OFF; gimbal motor control circuit breakers are OPEN.

06 21 01 37 CDR OPEN.

06 21 01 38 LMP TVC power 1 and 2, OFF.

06 21 01 40 CDR OFF.

06 21 01 41 LMP Direct RCS, OFF.

06 21 01 42 CDR Direct OFF.

06 21 01 43 LMP Main bus ties are OFF.

06 21 01 45 LMP Flight QJAL recorder.

06 21 01 48 CMP Flight QJAL is OFF. That's it.

06 21 02 04 CDR Houston, Apollo 7.

06 21 02 06 LMP Roger. Our residuals are minus two balls 469 plus 00128 plus 0079; the DELTA-V counter is hardly visible due to the bright sunlight in the cabin at this time, even with the numerics still up, so we're having it cut off itself.

06 21 02 26 CC Roger. Understand. It cut off on the DELTA-V counter.

06 21 02 31 IMP That's right.

06 21 02 32 CC Thank you.

06 21 02 55 IMP I'm reading 4.55 percent oxidizer left, and 3.8 percent fuel left on the SPS.

06 21 03 05 CC Roger.

06 21 03 06 CDR Houston, Apollo 7.

06 21 03 07 CC Go.

06 21 03 08 CDR That's your big mistake in changing the rules in real time. First off, we couldn't see the DELTA-V counter.

06 21 03 16 IMP Yes --

06 21 03 17 CC Roger. We read that; I think that the situation is rather obvious now.

06 21 03 20 CDR Okay. Let's then learn a big lesson from that.

06 21 03 29 CDR If you recall, we simulated that burn without doing that DELTA-V game.

06 21 03 34 CC Roger. That was a last minute change.

06 21 03 36 CDR That's correct; it didn't hurt us.

06 21 03 41 CDR That's the reason we went along with it.

06 21 03 47 CDR The DELTA-V counter residuals is minus 17.5.

06 21 03 57 CC Apollo 7, Houston. We have you in an 89 by 243.

06 21 04 02 IMP Roger.

06 21 04 03 CDR Roger. I had a chance to look at the accelerometer; it was just a smidgen under 1 g.

06 21 04 08 CC Roger.

06 21 04 09 CDR Which was a nice little experience for this long a period.

06 21 04 12 CC Right.

06 21 04 17 CDR It didn't even twitch a little bit when we took over a real nice transition into SCS MFDC.

06 21 04 25 CC Roger. Copy.

06 21 04 26 CDR It took very minute control adjustments to keep it on.

06 21 04 33 CC Roger.

06 21 05 41 CDR Houston, Apollo 7.

06 21 05 43 CC Go.

06 21 05 46 CC Apollo 7, Houston. Go.

06 21 05 48 CDR Houston, Apollo 7.

06 21 05 49 CC Apollo 7, Houston. How do you read?

06 21 05 57 CC Apollo 7, Houston. How do you read?

06 21 06 12 CC Apollo 7, Apollo 7. Over.

06 21 06 21 CC Apollo 7, Apollo 7. How do you read? Over.

06 21 06 25 CDR Roger. Read you loud and clear.

06 21 06 27 CC Roger. We had to go to manual key.

06 21 06 30 CDR That was a real nice maneuver. The machine performed beautifully.

06 21 06 34 CC Good.

06 21 06 35 CDR ... completed either one.

06 21 06 36 CC Nice to hear.

06 21 06 42 CDR We may be mopping up water; we'll check that a little later.

06 21 06 45 CC Roger. That ought to have settled quite a bit out.

06 21 06 52 CDR We are realigning to the DSKY ALIGN.

06 21 06 55 CC Roger.

06 21 09 10 CC Apollo 7, Apollo 7. One minute to LOS; Canaries at 14. Over.

CANARY (REV 105)

06 21 14 40 CC Apollo 7, Houston through Canary.

06 21 14 42 LMP Roger. Hey, Bill, we've had our primary evaporator shut down for - coming on to about 36 hours, I guess, or 30 hours. How often am I going to have to reservice that? It's going to be susceptible to drying out just like the secondary, isn't it?

06 21 14 59 CC Stand by.

06 21 16 01 CC Apollo 7, Houston. Recommend leave primary evaporator as is. We will open up back pressure valve prior to 48 hours elapsed, and ground is not particularly worried about that.

06 21 16 19 LMP Thank you. I'm glad they are not.

06 21 16 21 CC That's very reassuring.

06 21 16 29 LMP If you read, rock your tower, will you?

06 21 16 32 CC Roger.

06 21 16 37 CDR Hey, Bill, how come you let the third team stay on for the big burn?

06 21 16 43 CC Well, we had to have some practice.

0 06 21 16 46 CDR Yes, you'll have something to say in your press conference today.

06 21 16 50 CC What's this?

06 21 16 54 CDR Aren't you having those duty press conferences when you break up?

06 21 16 59 CC Oh, I've been working the graveyard shift. I haven't had any of those.

06 21 17 04 CDR Oh, the press corps goes to bed when you're working?

06 21 17 06 CC Right. Donn and I have been having conversations.

06 21 17 10 CDR Bill, we've been getting briefed during the day.

06 21 17 53 CC Apollo 7, Houston. One minute LOS Canary; Tananarive at 31.

06 21 17 59 CDR Roger.

06 21 18 08 CDR Our residuals are exactly 50 feet per second.

06 21 18 14 CC Say again, Wally.

06 21 18 16 CDR I said our residuals are exactly 50 feet per second.

06 21 18 19 CC Roger. Copy that.

TANANARIVE (REV 105)

06 21 32 50 CC Apollo 7, Houston through Tananarive.

06 21 32 55 CDR Put down a plot ... lake ... and Lake Victoria, frame 11, magazine R as in Romeo.

06 21 33 04 CC Roger. Wally, just one thing on T align for this passive thermo control test: if you set

1

in the T align that we have given you prior to 166 plus 50, you'll have to do it over again.

06 21 33 24 CC I'm sorry; that's 165 plus 50.

06 21 33 37 CDR Starting out real nice down there today.

06 21 34 02 CDR Houston, Apollo 7.

06 21 34 06 CC Go ahead, 7.

06 21 34 08 CDR May I have the coordinates for the station at Tananarive? I'll try to get a picture of it.

06 21 34 12 CC Roger. Stand by.

06 21 34 33 CC Apollo 7, Houston.

06 21 34 41 CMP Go ahead.

06 21 34 42 CC Donn, if you set in the T align that we gave you for this passive thermo control test prior to 165 plus 50, you'll have to redo it again.

06 21 34 55 CDR We understand that. That's why we had it up there originally.

06 21 34 58 CC Okay. Real fine.

06 21 35 00 CDR Yes, that's two for today. We've really got it in.

06 21 35 05 CMP Jack, why do I have to do it over, offhand? Is it that far in error, or did you say you were going to fine tune it?

06 21 35 11 CC Well, what it does, you'll be over - one rev ahead on the integration there.

06 21 35 21 CMP Houston, Apollo 7. Over.

06 21 35 25 LMP Hey, Jack, are you still there?

06 21 35 26 CC Roger, Walt.

06 21 35 27 LMP Are you familiar with our fuel pump problem? Fuel pump 2? We got fuel pump 2 back on the line. Do you want me to leave it on until the condenser is off - temperature hits 200 and starts cycling back and forth between 200 on condenser exhaust and 380 on skin temp? Or just save it for when I need it? I'd just as soon leave it on the line, unless somebody else has strong druthers.

06 21 35 57 CC Okay. Walt, we would like to leave fuel cell on the line to see if  $T_{CE}$  goes on up toward 200 again.

06 21 36 07 LMP ... again, and if it's okay with you, I'll just leave it at 200 and cycle back and forth as per our cycling procedures.

06 21 36 21 CC Affirmative, Walt.

06 21 36 34 LMP Houston, are you still there?

06 21 36 36 LMP You still there, Jack?

06 21 36 37 CC Apollo 7, Houston. Go ahead.

06 21 36 42 LMP Roger. We have a large puddle of water on the aft bulkhead after our last burn; looks like it's probably a good pint. We've marked the perimeter of the puddle on the aft bulkhead, and somebody can calculate how much water was in there.

06 21 26 58 CC Roger. Understand.

06 21 37 01 LMP There is a kind of meniscus effect. This water sort of bunches up off the floor.

06 21 37 16 LMP We also had water coming out of the water gun during the day, but not a lot.

06 21 37 21 CC Okay. Copy that.

06 21 37 24 CDR It's coming out in big drops.

06 21 37 30 CDR Have you been briefed on the problem we had on the fuel panel's number 5 burn with the 50 feet per second added?

06 21 37 42 CC Okay. Wally, the COMM here at Tananarive isn't too good. We'll pick you up over Carnarvon, and let's get a good rundown on it then at 165 plus 47.

06 21 37 55 CDR Okay.

06 21 38 18 CDR Getting to see ...

06 21 39 03 CDR At 165 hours 39 minutes, the water gun's putting out more gas than water at this point.

06 21 39 19 CC Roger. Copy that, Wally. We're just about to lose you over Tananarive. Pick you up over Carnarvon.

06 21 39 25 CDR You copying our perigee torque here?  
CARNARVON (REV 105)

06 21 49 34 CC Apollo 7, Houston through Carnarvon.

06 21 49 38 CDR Roger. I prepared your torque start on this one with the thrust on the perigee about 230 degrees

local, pitch down 30 degrees, went right on down through 270; and as we climbed to a high apogee, there was not enough Q there to affect us, so we did a nice sweet loop right through apogee -

06 21 49 58 CC Roger. Copy that.

06 21 50 00 CDR ... through 90 degrees local vertical.

06 21 50 03 CC Roger. Copy that.

06 21 50 05 CDR The remark I tried to make at Tananarive is let's not make changes in the system at the last minute. That's how I got a sweet little 50 feet per second overburn on that burn 5.

06 21 50 15 CC Roger. Copy, Wally.

06 21 50 18 CDR I thought we learned that a long time ago. It would have been 100 feet per second if I hadn't cut it down to 50. Our problem was the sun hit right on the DELTA-V counter, and the burn switch was up full bright; and that was not sufficient to keep it illuminated.

06 21 50 37 CC Okay. Understand.

06 21 50 40 CDR Now we did do burn 5 with MCC in the past.

06 21 50 47 CC Okay. Wally, on the fuel cell: we have been plotting RAD IN and RAD OUT temperatures, and it looks like we got a good DELTA-T, so it appears right now that the coolant pump is working.

06 21 50 59 CDR Good news.

06 21 51 02 CDR Except what is the problem then?

06 21 51 05 CC Wally, we are really looking at the data here, and we are going to let you know as soon as we get some time history on the data after Carnarvon here.

06 21 51 14 CDR I think we're going to have a new page in that malfunction book.

06 21 51 16 CC What we would like to do is see if the condenser exhaust temperature will stabilize. That's why we would like you to let it go to 200.

06 21 51 25 CDR Got it.

06 21 51 26 IMP We can't possibly have an internal problem, Jack. One of the things that surprised me was when I took fuel cell 2 OFF, fuel cell 1 then started to climb in condenser exhaust and skin temp and at a greater rate than fuel cell 3, although both of them were picking up the same amount of added load. Fuel cell 3 held everything right in there; its controls seem to be a lot better than fuel cell 1. And as soon as I put fuel cell 2 back on the line to pick up its share of the load, fuel cell 1 came back on down again.

06 21 51 57 CC Roger. We saw all that, Walt. We are looking right now at something in the regenerator there.

06 21 52 04 IMP Roger. Sounds about right.

06 21 52 20 CC And, Apollo 7. —

06 21 52 21 CDR ... To cut the 0.3 degree per second in pitch, and we will start looking for inertial.

06 21 52 27 CC Roger. Now, Wally, we showed - -

06 21 52 30 CDR That's close to it, I figure.

06 21 52 33 CC We would like you to switch quad Bravo to secondary tanks now.

06 21 52 40 CDR Roger. Bravo secondary ON, Bravo primary OFF.

06 21 52 49 CC Copy that.

06 21 52 53 CDR You must know something we don't on that one. Oh, you're reading that, aren't you?

06 21 52 59 CC Roger. Wally, we used just a little bit more than we expected during the burn on quad Bravo there.

06 21 53 07 CDR How close is the balance now?

06 21 53 10 CC Stand by. We will have it for you.

06 21 53 12 CDR Good.

06 21 53 21 CC Wally, the difference between Bravo and Delta is 13 pounds.

06 21 53 27 CDR Okay.

06 21 54 16 CC Walt, I have this SPS propellant thermal control PAD to give you whenever you are ready.

06 21 54 26 LMP Wait one.

06 21 55 09 CDR Houston, Apollo 7.

06 21 55 12 CC Go ahead.

06 21 55 13 CDR Did you notice our DSKY?

06 21 55 16 CC Negative. I've been looking at the fuel cells. Stand by.

06 21 55 21 CDR And do you notice our inertial attitude?  
That's on you all.

06 21 55 37 CDR We had free ride to 000; now, we got to go fly  
back again.

06 21 55 43 CC Roger. Copy.

06 21 56 36 CDR Hey, Jack.

06 21 56 38 CC Go ahead.

06 21 56 42 CDR Do you have the SPS propellant thermal control  
update?

06 21 56 45 CC Roger. Your T zero is 167 plus 57, roll 004,  
pitch 183, yaw 020.

06 21 57 09 CDR Is our T align required on this one?

06 21 57 13 CC Negative, Wally.

06 21 57 09 CDR Roger.

06 21 57 51 CC Apollo 7, we are 1 minute LOS Carnarvon; we  
pick you up Honeysuckle. You want to turn  
your S-band volume up.

06 21 58 00 CDR Okay. What time do you pick them up, Jack?

06 21 58 03 CC We've got continuous coverage now. We are  
really high; we've got wide overlapping cover-  
age.

06 21 58 08 CDR Very good.

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HONEYSUCKLE (REV 105)

06 21 59 31 CC Apollo 7, Houston. Opposite omni.

06 21 59 38 CDR Copy. But you sure have a lot of grass in the  
background. I'm keeping the volume down.

06 21 59 44 CC Roger. Copy.

06 22 00 57 CDR Apollo 7.

06 22 00 59 CC Go ahead, 7.

06 22 01 01 CDR Would you check to see if with the Maurer movie camera, 18mm lens, at ... frames per second, whether we overlapped on frame exposure? Over.

06 22 01 18 CC Okay. Wally, we have a real garbled signal here at Honeysuckle. I'd like to wait and get you through Hawaii. We pick up Hawaii at 166 plus 15.

06 22 01 30 CDR Okay. The subject is the movie camera.

06 22 01 35 CC Okay. I copied something about the movie camera, but I didn't get it all.

06 22 01 39 CDR Okay. I'll wait.

06 22 01 40 CC Roger.

HAWAII THROUGH ANTIGUA (REV 105)

06 22 15 43 CC Apollo 7, Houston through Hawaii.

06 22 15 46 CDR Roger. I've stopped losing at playing the game with this deal on. Let's get a good mark on the perigee torquing.

06 22 15 56 CDR The whole thing's going to be automatic power as far as I'm concerned so that fuels on the ground test, and let's get some data on how fast it goes up at this high velocity at perigee.

06 22 16 07 CC Okay. Real fine, Wally.

06 22 16 10 CDR As I see it, perigee is at about 43 - just 7 minutes before the start of the test.

06 22 16 18 CC Okay. Copy that.

06 22 16 28 CDR You might get prepared for fuel usage on this, too; I'd like to find out if this might be a setup you'd have just prior to a burn for some later mission.

06 22 16 37 CC Okay. We'll get a real good hack on it as you go through.

06 22 16 40 CDR Very good.

06 22 16 43 CC And I'm ready - what were you asking me about on the movie camera?

06 22 16 48 CDR Oh, yes. I'm going to try to do some strip-mapping. We did some in the States the other day when the hurricane was coming through.

06 22 16 55 CC Roger.

06 22 16 57 CTR And we shot at one frame a second with an 18mm lens, and I'm not sure whether we have overlap or not. Could you check on that?

06 22 17 06 CC Okay. Will do.

06 22 17 07 CDR And - we may need to use six frames a second, but, if so, we can handle that, too.

06 22 17 11 CC Okay.

06 22 19 37 LMP Houston, Apollo 7.

06 22 19 39 CC Go ahead, Walt.

06 22 19 40 LMP What about a map update when you get a chance, Jack?

06 22 19 42 CC In work.

06 22 20 08 CC Okay. Walt, ready on your map update.

06 22 20 11 LMP Go.

06 22 20 12 CC Okay. For REV 106, the time of the node is 167 plus 42 plus 37, longitude 157.3 degrees east.

06 22 20 30 LMP Say the time again, please.

06 22 20 32 CC Roger. 167 plus 42 plus 37.

06 22 20 40 LMP Roger. Thank you.

06 22 20 56 CC And I have the morning news if you would like to hear it.

06 22 21 00 CDR I'm ready to copy.

06 22 21 01 CDR We have the Xerox machine working.

06 22 21 06 CC Roger. Jackie Kennedy and Aristotle Onassis are to be married soon. She and her children left New York last night to join him at his home in Greece. He's one of the world's wealthier men, 62 years old, she's 39. We saw - -

06 22 21 23 CDR That's Greek to me.

06 22 21 25 CC Roger. We saw the spacecraft loud and clear this morning from Houston.

06 22 21 29 CDR Oh, great.

06 22 21 30 LMP Very good.

06 22 21 32 CDR ...

06 22 21 37 CC And from the avalanche of cards and letters

that Penny's gotten, everybody must have seen your sign.

06 22 21 49 CMP Oh, no.

06 22 21 52 LMP Hope somebody's reading them.

06 22 21 56 CDR We were trying for a - you can tell this on Bill Parker, he came back too fast - referring to a weekly series Emmy award, and he said "Hammy award." It was broken today.

06 22 22 09 LMP They'll understand; they were going to throw us in the category of specials.

06 22 22 13 CC Roger. And Gladys is supposed to come onshore today near Tampa, early tomorrow. Winds are down to about 65 miles per hour; weather bureau calls it a minimal storm.

06 22 22 27 CDR That's fortunate.

06 22 22 35 CC And the US won its sixth gold medal in track yesterday by winning the high hurdles.

06 22 23 45 CDR Houston, Apollo 7.

06 22 23 48 CC Go ahead, 7.

06 22 23 49 CDR Roger. We lost you after the sixth gold medal report.

06 22 23 55 CC That's all the morning news.

06 22 23 58 CDR Okay. I send you one - thank the boys in the back room for the pitch and yaw gimbal settings; that was great on that engine.

06 22 24 05 CC Reger.

06 22 24 06 CDR Just slid right in.

06 22 25 32 LMP Houston, Apollo 7. Are you through Honeysuckle ...

06 22 25 37 CC Say again, Walt?

06 22 25 39 LMP You're coming through Honeysuckle, right?

06 22 25 44 LMP Can I confirm that that last map update that you gave was the next ascending node coming up?

06 22 25 58 CC Apollo 7, could you switch omnies?

06 22 26 04 LMP Roger. Jack, could you confirm that the map update that I have is for the next ascending node that is coming up?

06 22 26 11 CC Stand by.

06 22 26 15 LMP I show 167 plus 43. Could you verify?

06 22 26 23 CC Roger. Walt, the time of the node is 167 plus 42 plus 37; that will be for the orbit coming up.

06 22 26 56 LMP Okay. Jack, if you get a chance in the future, we'd just as soon - we have the ascending node about - -

06 22 27 14 CC Apollo 7, Houston.

06 22 27 24 LMP ... Two revs ahead because our chart is not as accurate as it used to be with our change in inclination. That way, we can have a more accurate chart for a longer period of time.

06 22 27 32 CC Okay. Walt, we just had a handover, and I didn't get all you said, but I think the basic part of

it is you'd like a map update about every two  
revs. Is that Charlie?

06 22 27 47 LMP Negative. We'd like - whenever we call for a  
map update, we'd like to have it for about two  
ascending nodes in the future. Over.

06 22 27 54 CC Okay. Copy that.

06 22 27 58 CDR Jack, you might tell the boys at Carnarvon we  
got a good picture of them today.

06 22 28 01 CC Okay.

06 22 34 21 CDR Houston, Apollo 7.

06 22 34 24 CC Go ahead, 7.

06 22 34 25 CDR Did you get me an answer on that frame overlap?

06 22 34 28 CC It's in work.

06 22 34 29 CDR Okay. We're about ready to strip here.

06 22 34 31 CC Okay.

06 22 34 35 CDR You can play the music.

06 22 34 37 CC Roger.

HAWAII THROUGH ANTIGUA (REV 106)

06 22 35 35 CDR Houston, you have a little high cirrus today,  
but generally wide open.

06 22 35 40 CC Roger. Concur.

06 22 35 44 CDR We see no thunderstorms in the Gulf, none to  
the west of you. There is a band of weather,  
approximately around the San Antonio area, and  
another band over towards New Orleans.

06 22 35 56 CC Roger. Thank you.

06 22 35 57 CDR We are stripping at one frame per second.

06 22 37 08 CDR Getting a good look at the hurricane, Jack.

06 22 37 12 CC Roger.

06 22 37 14 CDR She's high and wide. We are just passing the eye, got a glimpse of it.

06 22 37 23 LMP Took a photograph of it. That was frame 13 of magazine R.

06 22 37 32 CC Okay. Copy that, Wally.

06 22 38 17 CDR The Cape is loud and clear. We can see all the launch pads, and it looks like she's ready for business.

06 22 38 23 CMP We can see Saturn V on the pad.

06 22 38 26 CC Oh, Roger.

06 22 39 06 CDR Jack, those guys over in Helmut Kuehnel's shop should have that answer for you by now on that film overlap.

06 22 39 11 CC Roger. Wally, I've been riding them, and they say it's coming.

06 22 39 21 CC Okay. Wally, I've got some happiness for you.

06 22 39 24 CDR Go ahead.

06 22 39 25 CC Okay. For your fuel chart - -

06 22 39 27 CDR Go.

06 22 39 28 CC - - Okay. Present value on your chart should be 598. Your SCS redline 554, DAP redline 472, and the hybrid redline 236. How's that for happiness?

06 22 39 50 CDR Very nice. We're up on it.

06 22 39 54 CC And the quad balance is such that we have got all those redlines.

06 22 40 00 LMP Jack, does that 598 include the 60-80 pounds of unusable?

06 22 40 09 CC Includes the unusable.

06 22 40 10 LMP That's a chart update?

06 22 40 12 CC Roger. That's your chart update, Walt.

06 22 40 16 CDR Okay. I want to see what kind of fuel we use after this session.

06 22 40 19 CC Okay.

06 22 40 23 CDR We're whistling right through perigee.

06 22 40 27 LMP Are you plotting these on your chart down there, Jack?

06 22 40 31 CC Yes, sir; I am.

06 22 40 33 LMP Okay. Look at the difference between yesterday's number 666, and a 598. Like 68 pounds.

06 22 40 42 CC Affirmative. We are calling it here.

06 22 40 48 CDR That's quite a big drop.

06 22 40 51 CC I agree.

06 22 41 31 CMP Say, Jack, this is Donn.

06 22 41 33 CC Go ahead.

06 22 41 35 CMP That seemed like an awful lot of fuel for no more than we've done since yesterday. Could you have someone run through their data down there and see if they can ascertain just when and in what condition we used up all the fuel?

0 06 22 41 47 CC Okay. We are doing a good analysis on it now, Donn. We will get it back to you.

06 22 41 51 CMP Okay. Because I don't think we should have used more than about 15 or 20 pounds at the outside for that burn today.

06 22 41 58 CC Okay. In work.

06 22 43 33 CC Apollo 7, Houston.

06 22 43 34 CDR Go ahead.

06 22 43 35 CC We've got an updated number for you on your chart value.

06 22 43 40 CDR Go.

06 22 43 41 CC Okay. 628.

06 22 43 43 CDR Ah, ha. That's a little better. That is much better news.

06 22 43 50 CC It's 30 pounds more happiness.

06 22 43 52 CDR That's a heck of a deal, a real hump in that curve.

06 22 43 55 CC Roger.

06 22 44 03 CDR ... about our fuel here if we keep that up.

06 22 44 11 CC Roger.

06 22 45 21 CC Apollo 7, Houston. We are about to lose you at Antigua. We will pick you up at Ascension at 53.

ASCENSION (REV 106)

06 22 54 15 CC Apollo 7, Houston through Ascension.

06 22 54 18 CDR Roger. Loud and clear. I'm pumping it out.

06 22 54 28 CC Walt, something - a note of interest here. The  $T_{CE}$  that you are reading on your gage is approximately 3 degrees higher than the actual value.

06 22 54 43 LMP Roger. The - it triggered the master alarm at 178 yesterday. ...

06 22 54 51 CC Okay. Copy that, Walt. And the answer, Wally, to your question on the 16mm camera: at 90 miles, when you are going through perigee, you'll have about 70 percent overlap at one frame per second, and at apogee of 245, you'll have about a 75 percent overlap.

06 22 54 14 CDR Roger. Thank you.

06 22 54 39 LMP Houston, Apollo 7. Are you getting our data real time, or do you want us to be recording it?

06 22 54 54 LMP Houston, Apollo 7. How do you read?

06 22 54 56 CC 7, could you say again your message?

06 22 56 02 LMP The DTO requires low bit rate ... is it playing when we leave your control?

06 22 56 15 CC Okay. Stand by, Walt.

06 22 56 46 CC Walt, we're playing the DSE as normal. We have a high bit rate over the stations. We'll put it low bit rate RECORD as we get LOS and opposite omni.

06 22 57 03 LMP Roger. Just want you to know: we are doing a DTO now, and we will need the tape recorder back when we leave you.

06 22 57 15 CC We'll give it back to you as we leave you, Walt.

06 22 57 24 CC Apollo 7, we'd like to go quad Alfa SECONDARY.

06 22 57 48 CC Apollo 7, did you copy that?

06 22 57 51 LMP Roger.

06 22 58 26 CC Walt, you are confirming quad A is in SECONDARY now?

06 22 58 31 LMP Affirmative.

06 22 58 33 CC Thank you.

06 22 58 45 CDR Jack, say again about quad A.

06 22 58 48 CC Roger. Wally, we'd like you to switch to secondary tanks on quad Alfa.

06 22 58 56 CDR You want quad A SECONDARY. Is that correct?

06 22 58 59 CC That is correct.

06 22 59 06 CDR Quad A is now SECONDARY.

06 22 59 08 CC Roger.

06 22 59 13 CC We're about 1 minute LOS Ascension; we pick you up at Tananarive at 08.

TANANARIVE (REV 106)

06 23 11 43 CC Houston - Apollo 7, Houston through Tananarive. Standing by.

CARNARVON (REV 106)

06 23 24 59 CC Apollo 7, Houston through Carnarvon.

06 23 25 03 CDR Roger.

06 23 25 38 CC Apollo 7, opposite omni.

06 23 27 38 CDR Houston, Apollo 7.

06 23 27 40 CC Go ahead, 7.

06 23 27 42 CDR I think you can notice our pitch and yaw staying in quite tightly here; we are just drifting with the roll rate.

06 23 27 48 CC Roger. That's what we're seeing.

06 23 27 50 CDR Roger. Just threw it to you.

06 23 28 54 CC Apollo 7, Houston.

06 23 28 56 CDR Go ahead.

06 23 29 01 CC Wally, on this SCS attitude control test that's coming up: we would like to move it to - from 168 00 to 168 30; this will move it away from perigee, and you'll use less fuel.

06 23 39 16 CDR Ah, ha. That's what I asked yesterday. 168 30?

06 23 29 20 CC Roger. 168 plus 30, begin the SCS attitude control test, and you can cut it off at 169 10. Thought I'd help you out a little bit more: going 40 minutes rather than an hour.

06 23 20 36 CDR Roger.

06 23 29 45 CDR Better take us T plus 3 hours into the test here.

06 23 29 52 CC Say again, Wally.

06 23 29 53 CDR Okay. That's at the temperature part, I see.

06 23 29 55 CC Roger.

06 23 29 56 CDR Okay.

06 23 30 47 CDR I wish they hadn't had that in tight deadband.

06 23 30 54 CDR Also wish we had started at perigee.

06 23 30 57 CC Roger.

0 06 23 31 05 CDR It seems to be pretty close to the end of the test, so you can just make note of the numbers so I won't have to log them.

06 23 31 11 CC Okay.

06 23 31 14 CDR When you get LOS, just take your last number.

06 23 31 17 CC Copy.

06 23 31 18 CDR Any rolls yet - any motions whatsoever - the drifting part.

06 23 31 24 CC Roger.

06 23 31 50 CDR I'd say it's flying about a two - two and a half degree cone around the three zeros.

06 23 31 56 CC Okay. Copy that.

06 23 31 58 CDR This is very small.

0 06 23 32 04 CC Wally, is that cone getting any bigger, or is it staying about the same?

06 23 32 08 CDR It seems to be getting just a little bit bigger now; it's going out to three as you can see.

06 23 32 14 CC Roger.

06 23 32 22 JDR It is diverging slightly.

06 23 32 46 CDR That proves a point; pitch is going out.

06 23 33 21 CDR And the flight way rate developing which is making that pitch yaw develop.

06 23 33 27 CC Copy that.

06 23 33 31 CDR And our Q is probably picking up - that's why.

06 23 33 39 CC You're right at apogee now.

0 06 23 33 43 CDR Oh, it is now?

06 23 33 45 CC You're 20 minutes -

06 23 33 46 CDR I'll be darned.

06 23 33 47 CDR Oh, yes. We got 45 minutes to go, right?

06 23 34 10 CDR How much more time do you have in this pass?

06 23 34 12 CC We are just about 1 minute LOS Carnarvon. We have a very low angle pass at Guam at 39, then Hawaii at 50.

06 23 34 25 CDR Roger. I'm only about a minute away from end of test, so you can take these angles for us.

06 23 34 31 CC Okay. We are copying them.

06 23 34 34 CDR Roger.

06 23 34 40 CDR The reason yaw is decreasing, of course, is we are flying across the belly band now.

06 23 34 45 CC Roger.

GUAM (REV 106)

06 23 41 29 CC Apollo 7, Houston through Guam.

06 23 41 33 IMP Roger. Jack, incidentally, I'm manually balancing my hydrogen tanks now, and I'd appreciate it if you guys would keep an eye on those quantities and let me know when you think we're close on the balancing. You're a little more accurate than I am.

06 23 41 47 CC Will do.

HAWAII (REV 106)

06 23 51 45 CC Apollo 7, Houston through Hawaii.

06 23 51 50 CDR Roger.

## CALIFORNIA (REV 106)

07 00 01 38 CC Apollo 7, Houston through California.

07 00 01 44 CDR Roger. I want to record a comment that people ought to be concerned about the high forces on the switches that may close a loop by touching a liquid at the same time they activate the switch. As a result, we don't move around the cockpit.

07 00 02 03 CT It's on its way, Roy.

07 00 02 06 CC Roger.

07 00 02 41 CC Apollo 7, would you turn up your S-band so we can get you S-band through Goldstone?

## GOLDSTONE through ANTIGUA (REV 106)

07 00 03 41 CC Apollo 7, how are you reading through Goldstone?

07 00 03 46 CDR Loud and clear.

07 00 03 48 CC Roger.

07 00 04 30 CDR We're starting into perigee and BEF, and it looks like it's going to slip right over to SCS, so I'll just let her ride.

07 00 40 41 CC Okay. Copy that.

07 00 40 56 CDR I want to see if it stays at SCS. Apparently, it likes SCS best.

07 00 05 02 CC Roger. It's streamline, I guess.

07 00 05 06 CDR Yes, it does.

07 00 05 08 C. And, Wally, Joe is in the viewing room.

07 00 05 16 CDR Very good. I'll drop in some time next week.

07 00 05 19 CC Roger.

07 00 05 27 CDR I'll drop in the fun room and thank you cats for a pretty good show.

07 00 05 32 CC Roger.

07 00 05 44 CDR Assuming Lew Allen and Bill Shaffer can target pretty well.

07 00 05 51 CC He'll be happy to hear that.

07 00 06 14 CC Roger.

07 00 06 16 CDR All we're doing is pulsing yaw and roll here, Jack.

07 00 06 20 CC Okay.

07 00 06 21 CDR Just looking right over the top.

07 00 06 22 CC Okay. Okay. Copy that.

07 00 06 24 CDR We ought to have enough time to go on around on the roof in apogee.

07 00 06 54 CDR ... the clock since we started our flight.

07 00 06 58 CC I didn't copy that, Wally.

07 00 07 00 CDR You can see the radial develop into a process giving the same attitude as we did at 57.

07 00 07 09 CC Okay. Copy that, Wally.

07 00 07 11 CDR And we're not at perigee yet either, are we?

07 00 07 21 CC Not quite at perigee, Wally.

07 00 07 24 CDR About 13?

07 00 07 44 CC Wally, you will be at perigee in 7 minutes.

07 00 07 47 CDR Roger.

07 00 07 51 CDR Jack, the torque changes even faster than it has before.

07 00 07 56 CDR One-tenth per second in pitch.

07 00 08 02 CC Roger. Copy.

07 00 08 06 LMP Hey, Jack, have you guys figured any leveling off of this condenser drop temperature yet?

07 00 08 18 CC Okay. Walt, it appears to be leveling off slightly, but we're still watching it. It's not conclusive yet.

07 00 08 25 LMP Roger.

07 00 08 27 CDR On this - PTA where we had attitude hold MAX deadband: we had MAX deadband rate power LOW and limit cycle ON and OFF.

07 00 08 38 CC Okay. Stand by.

07 00 08 40 CDR Okay.

07 00 09 13 CC Roger. Wally, that will be rates LOW, limit cycle OFF.

07 00 09 21 CDR And MAX deadband only. Okay.

07 00 09 26 CDR We're almost up to six-tenths of a degree per second here.

07 00 09 30 CC Roger. We're copying the rates.

07 00 09 32 CDR Great. I think we all agree it was a good idea to shift this thing.

07 00 09 36 CC Roger.

GOLDSTONE through ANTIGUA (REV 107)

07 00 11 33 CC Apollo 7, Houston.

O 07 00 11 38 CDR Go ahead.

07 00 11 39 CC Wally, when we begin this SCS attitude control test, we'll get a little more information down here on telemetry if you'll put your GDC on FDAI number 1.

07 00 11 52 CDR Roger.

07 00 11 59 CDR We're really whistling around up here.

07 00 12 03 CC And we're seeing those rates.

07 00 12 06 CDR We're having our noon chow with pea soup and all that good stuff right now.

07 00 12 12 CC Roger.

07 00 12 18 CDR Nobody will swap for the bite size. They're just throwing them all away.

○ 07 00 12 24 CC Copy that.

07 00 12 44 CC 7, when do you feel you will be getting into SPS cold soak attitude?

07 00 12 51 CDR Oh, soon as this rate starts dropping off, Jack. I've got six-tenths; it's decreasing now, so I should hit 180 pretty shortly.

07 00 13 00 CC Okay. Copy.

07 00 13 03 CDR I'll stop it on this revolution here.

07 00 13 06 CC Okay.

07 00 13 14 CDR I'll be going through a - about 75 degrees pitch down.

07 00 13 18 CC Roger.

○ 07 00 13 25 CDR Are we going over Bermuda?

0 07 00 13 29 CC You are going down the islands just north of Cuba.

07 00 13 33 CDR Okay.

07 00 15 08 LMP Hey, Jack, how about a map update, please.

07 00 15 12 CC In work, Walt.

07 00 15 23 CDR Notice how the rate has damped out.

07 00 15 29 CC Roger, Wally.

07 00 15 51 CC Walt, we're showing that oxidizer line temperature is getting close to the heater limit. You might look for that.

07 00 16 03 LMP I have been operating my heaters on the propellant tank line temperature.

07 00 16 08 CC Roger.

07 00 16 12 CDR I have just shot frames 20 and 21 of islands in coral reef, magazine R.

07 00 16 18 CC Copy.

07 00 16 21 CDR 18 and 19 also.

07 00 17 29 CC Apollo 7, Houston. I have your map update.

07 00 17 32 LMP Roger.

07 00 17 34 CC Okay. Walt, for REV 110: time of the node 173 plus 44 plus 35, longitude 64.6 degrees east.

07 00 17 57 LMP Roger.

07 00 18 14 CDR And frame 16, magazine R was another island in that same chain.

07 00 18 22 CC Roger. Copy that.

07 00 18 54 LMP Hey, Jack, do you have the time of our closest approach to Ascension?

07 00 19 01 CC Stand by, Walt.

07 00 19 49 CC Walt, your time of crossing Ascension will be approximately 32 48.

07 00 19 59 LMP 32 48? Looks like we come pretty close to it.

07 00 20 05 CC Roger.

07 00 21 45 CDR We're going to that attitude now.

07 00 21 48 CC Roger. Copy.

ASCENSION (REV 107)

07 00 28 56 CC Apollo 7, Houston through Ascension.

07 00 29 30 CC Apollo 7, Houston through Ascension.

07 00 30 27 CC Apollo 7, Houston through Ascension.

07 00 30 32 CDR Roger.

07 00 36 24 CC Apollo 7, Houston. We're about to lose you at Ascension; pick you up at Tananarive at 168 plus 44.

TANANARIVE (REV 107)

07 00 46 16 CC Apollo 7, Houston through Tananarive.

07 00 46 37 CC Apollo 7, Houston through Tananarive. Standing by.

07 00 48 31 CC Apollo 7, Houston through Tananarive. Standing by.

07 00 52 51 CC Apollo 7, Houston. One minute LOS Tananarive; Carnarvon on the hour.

CARNARVON (REV 107)

07 01 00 18 CDR Houston, Apollo 7 here.

07 01 00 21 CC Roger, 7. Go ahead; we're standing by.

07 01 00 24 CDR Okay. Jack, I understood that you wanted to knock off the attitude hold at 169 hours and 10 minutes.

Does that mean you want to terminate the test at that time as well?

07 01 00 36 CC

Stand by, Wally.

07 01 00 40 LMP

Jack, a little further on that - we're sitting at 65 now on the SPS propellant tank temperature, and it's lowest it's been, and it's not about to get down to any 45 by the end of this test.

07 01 00 55 CC

Roger. Understand, Walt. Stand by.

07 01 02 03 CC

Apollo 7, Houston.

07 01 02 06 LMP

Go, Jack.

07 01 02 07 CC

Okay. Walt, on the SPS temperatures: we've had a data loss here. We hope to be back in shape at Guam, and we'll take a look at the temperatures there and give you a little bit further hack on this cold soak test. And on the termination of the attitude control test at ten: that was for the MIN deadband high rate; then we pick up this MAX deadband low rate test from there on. We should be through with that before we get down into perigee.

07 01 02 38 CDR

I'm MAX deadband low rate now.

07 01 02 40 CC

Okay. Real fine.

07 01 02 42 CDR

41 and 10, MAX deadband high rate?

07 01 02 51 CC

Roger.

07 01 02 52 CDR

If we go MAX deadband in high rate, that will be good enough for the cold soak, so I'll do that at ten.

07 01 02 59 CC Okay. The attitude before should have been MIN deadband high rate; now we should be MAX deadband low rate.

07 01 03 06 CDR Okay. I'll reverse it; I had MAX deadband low rate so far.

07 01 03 12 CC Okay. Then pick it up MIN deadband high rate, and we'll try to get done before we go through perigee.

07 01 03 20 CDR Okay. I'll switch it now, then, Jack, just to make it early.

07 01 03 25 CC Okay.

07 01 03 30 LMP Hey, Jack, you may have lost your data readout, but I've got good ones on board here; and I've checked the oxidizer line temperature down the wall, and it looks like it's a little - something a little under 170. Propellant tank temperatures are 165, and that should be as good as your data readout. What I'm saying is that we're never going to get down to the point where I'm going to kick a heater out. I might suggest that when we do terminate this test, it will be useful to turn on the SPS line heaters to A slash B and watch for a rise at least to see if they're working at all.

07 01 04 02 CC Okay. We copy that.

07 01 04 06 LMP Okay. Do you concur with that?

07 01 04 09 CC We're going to put that in the mill and discuss it here.

07 01 04 16 CDR Jack, on Tananarive, it turns out you can broadcast in the blind to us there, and the odds are we'll get it, but we can't seem to talk back to you.

07 01 04 25 CC Okay. Fine, Wally.

07 01 04 26 CDR We'd like you to pass that on to the other flight controllers.

07 01 04 30 CC Will do.

07 01 04 31 CDR Thank you.

07 01 06 14 CC Apollo 7, Houston.

07 01 06 17 CDR Go ahead, Jack.

07 01 06 18 CC Roger. We've got data back now, and we need about 40 minutes at this MIN deadband high rate; then you can return to the normal cold soak attitude configuration.

07 01 06 35 LMP Would you say that is a new good configuration - you want 40 minutes of it - and that you want to keep going with this cold soak test?

07 01 06 44 CC Affirm. We'll look at it over Guam and see what the trend is there.

07 01 06 50 LMP If you don't hear data, you can always ask me on the loop, and I'll give you my readouts. They're supposed to be prime.

07 01 06 57 CC Okay. We've got data now.

07 01 07 03 CDR ...

07 01 07 12 CC Say again, Wally.

07 01 07 15 CDR Could you find the COMSAT operation? We lost the line down there someplace.

07 01 07 28 LMP Hey, Jack, can you give me a readout of hydrogen tank 1 quantity and hydrogen tank 2 quantity - what you show?

07 01 07 35 CC Okay. Stand by.

07 01 07 48 CDR Jack, the reason I made that remark - after about 8 days of staring at clocks down there, I'm sure you guys are beginning to think they're all right.

07 01 07 57 CC Roger. Wally, we'll get back to you on that; we'll discuss that pretty closely, and I'm getting your tank quantities, Walt.

07 01 08 06 CDR Very good.

07 01 08 15 CC Walt, on the hydrogen quantity: tank 1 39.8, tank 2 37.6.

07 01 08 24 LMP Roger. I'll continue with the balancing. I'm wondering about the feasibility of maybe overshooting about 1 percent with tank 1.

07 01 08 37 CC Roger.

07 01 08 51 CC And, 7, we're about 1 minute LOS Carnarvon; we pick up Guam at 169 12.

07 01 08 57 CDR Roger. With perigee only 36 minutes away, you want 40 minutes on this control mode. That should be interesting.

07 01 09 05 CC Roger. Wally, we had intended to do the MIN dead-band high rate first to minimize the RCS firing as we went through perigee.

07 01 09 16 CDR ...  
GUAM (REV 107)

07 01 13 09 CC Apollo 7, Houston through Guam.

07 01 13 12 CDR Roger. Loud and clear.

07 01 13 15 CC Roger. Wally, we --

07 01 13 16 CDR I was just thinking we are getting worried about  
all the paper work; it's accumulating on our  
desks about preparing for this mission.

07 01 13 23 CC Roger. Wally, we have a state vector update and  
a DAP update we would like to send you. Would  
you go to ACCEPT?

07 01 13 31 CDR You got it.

07 01 13 32 CC Coming up.

07 01 13 41 CC And, Walt, I have the NAV check PAD to read  
whenever you are ready to copy.

07 01 13 49 CDR What time is perigee? I have it written as 44.

07 01 14 01 CC Okay. Wally, that's about right --

07 01 14 02 LMP Go with your NAV update.

07 01 14 04 CC Okay. The NAV check: GET of 175 plus 30 plus  
0000 plus 2562 plus 09300 1407.

07 01 14 30 LMP Roger. 175 30 0000 plus 2562 plus 09300 1407.  
Over.

07 01 14 38 CC Roger. That's correct.

07 01 15 04 CC And, Walt, I have - I would like to read you up  
the verification of the DAP data load we are  
passing you.

07 01 15 11 LMP Roger. We can read it right back to you in a minute.

07 01 15 14 CDR Is that the end of the update?

07 01 15 20 CC Negative.

07 01 15 22 CDR Okay. Standing by.

07 01 15 23 LMP Go ahead with the DAP update, Jack.

07 01 15 26 CC Okay. NOUN 47 - I'll read you R1, R2, and R3: plus 00139 plus 00455 plus 24921 NOUN 48 minus 00078 minus 00130 plus 02412.

07 01 16 17 CC Were you able to copy that, 7?

07 01 16 19 LMP I didn't get the NOUN 48. Would you say NOUN 48?

07 01 16 22 CC Okay. Minus three balls 78 minus two balls 130 plus 02412.

07 01 16 39 CDR Is the update finished?

07 01 16 42 CC Affirmative, Wally. The computer is yours.

07 01 17 24 CDR That's GO on NAV update.

07 01 17 31 CC Say again, Wally?

07 01 17 33 CDR GO on that NAV update.

07 01 17 34 CC Roger. Copy that.

07 01 18 17 CC And, 7, when you can, would you switch your BIOMED to LMP?

07 01 18 26 CDR I want to remind you I'm going to break up another plug today and leave it off. There's a broken wire I don't want to have on when I put the suit back on.

07 01 18 38 CC Roger. Copy that.

0 07 01 18 50 LMP Should that program be stuck in POO this long?

07 01 19 00 CC Stand by.

07 01 19 02 CDR We are running in POO here. We'll let it ride out for awhile.

07 01 19 08 LMP You probably won't get anything on my BIOMED, Jack.

07 01 19 19 CC Okay. Wally, we feel that the computer will be finished with program 00 just shortly and Roger on your BIOMED data, Walt.

07 01 19 45 LMP NOUN 47 - NOUN 48 is GO.

07 01 19 49 CC Roger. Copy that.

07 01 20 00 LMP Does everybody down there concur with letting hydrogen tank 1 get down about 1 percent lower than tank 2?

07 01 20 08 CC In work, Walt.

07 01 20 10 CDR Okay. Perigee is at 45 now.

07 01 20 14 CC Roger.

07 01 20 35 CC Walt, we would like to balance these hydrogen tanks as close as possible to each other.

07 01 20 42 LMP Understand. I will stand by for your call. I show right now that they are getting pretty close; I'd say maybe 2 percent apart.

07 01 20 53 CC We'll give you a call.

07 01 20 57 CC And we are 1 minute LOS Guam; we pick you up at Hawaii at 27.

07 01 21 02 CDR Very good.

## HAWAII (REV 107)

07 01 28 15 CC Apollo 7, Houston through Hawaii.

07 01 28 19 CDR Aloha.

07 01 28 21 CC Walt, could you tell what omni antenna you're on now?

07 01 28 26 LMP Omni C.

07 01 28 28 CC Okay for a COMM test here, and let us know if you switch omni's, will you?

07 01 28 36 LMP Well, I'm always operating A and C, switching when you call unless something comes up where I think something in between is better.

07 01 28 42 CC Okay. Fine.

07 01 31 47 LMP Hey, Jack, this is Walt. We took frames 37 and 38 of the ... portraits.

07 01 31 55 CC Roger. Copy.

07 01 31 57 LMP Magazine N.

07 01 31 58 CDR Jack, when can I put this in sloppy deadband?

07 01 32 04 CC Okay. We'll get to that, Wally.

07 01 32 07 CDR Okay. ...

07 01 32 11 CC Okay. Copy.

07 01 32 13 CDR And if you've been reading our DSKY, you can see I'm pretty close to SCF.

07 01 32 22 CC Okay. I'll get back to you as soon as I can.

07 01 32 25 CDR Okay. It starts torquing about ... as you approach perigee, about 20 minutes before perigee.

07 01 32 32 CC Okay. I copy.

07 01 32 58 CC Apollo 7, opposite omni. Wally, is it starting to torque now?

07 01 33 02 CDR Just a little bit. Why don't you let me flip it over and see if it starts hitting it pretty hard?

07 01 33 08 CC Okay.

07 01 33 15 CDR I can actually feel the spacecraft working. It's starting to torque now.

07 01 33 21 CC Okay.

07 01 33 47 CDR Not as bad because of - why don't we see if we can stick with it because she's riding up the same way she would on inertial. Oh. I'll have to go back down ... GDT ...

07 01 34 09 CC Okay. Wally, you can terminate the MIN deadband at any time now, depending on your thruster activity. We've got enough data at any time now.

07 01 34 37 CC Apollo 7, Houston.

HUNTSVILLE through ANTIGUA (REV 107)

07 01 34 58 CC Apollo 7, Houston.

07 01 35 21 CC Apollo 7, Houston.

07 01 36 07 CC Apollo 7, Houston.

07 01 36 17 CC Apollo 7, Houston. You can terminate the MIN deadband attitude test at anytime now; we have enough data.

07 01 36 29 CDR Roger. I'm going lose deadband for SPS.

07 01 36 33 CC Roger. Copy that.

07 01 36 34 CDR Limit cycle ON, ... MAX rate high.

07 01 38 04 CDR Houston, do you read? Apollo 7.

07 01 38 06 CC Roger, 7. You are five-by.

07 01 38 08 CDR Okay. Do you see my GDC on number 1 ball?

07 01 38 12 CC We're - we don't have telemetry over the Huntsville, Wally.

07 01 38 17 CDR Okay. That's the third time; I just did it again. It flipped 180 degrees in pitch, and it did it on number 2 ball; it's terminated its discrepancy. I'll have to do another real line of GDC.

07 01 38 32 CC Roger. You say this exists just on the number 1 FTI?

07 01 38 36 CDR That's affirmative.

07 01 38 38 CC Roger.

07 01 38 47 CDR I have number 1 and 2 on the blockup --

07 01 40 47 CC Apollo 7, Houston.

07 01 40 49 CDR There we go. Loud and clear.

07 01 40 51 CC Roger.

07 01 40 52 CDR Okay. You got TM on me now?

07 01 40 55 CC Affirmative.

07 01 40 56 CDR Okay. I'm on number 1 ball, IMU number 2, GDC, with ORDEAL ON.

07 01 41 03 CC Okay.

07 01 41 04 CDR I'll put number 2 back to GDC; now can you see all this stuff. GDC on number 2 now, and it powers right in. Now, I'll put GDC on number 1.

07 01 41 20 CC Okay. Wally, we can't see number 2 ball data.

07 01 41 24 CDR There goes number 1 right now; that is sayanora.

07 01 41 26 CC Okay.

07 01 41 29 CDR It's a ... on GDC.

07 01 41 32 CC Okay. Walt, we've got a - we are approaching a heater cycle on tank 1. We would like to have you read out AC 1, phase A, B, and C now, and then during the heater cycle.

07 01 41 54 LMP Roger. Phase A is 114-1/2, B is 116, C is 114-1/2.

07 01 42 05 CC Okay. And we will let you know - you don't have to watch it - we will let you know when the heaters come on; then you can read it out again.

07 01 42 11 LMP Roger. And what do you think about when we terminate this SPS DTO - and I would suggest we do that any time - how about turning the heaters on AB position for long enough to observe a temperature rise to be sure they are working?

07 01 42 28 CC Okay. Walt, we are still discussing that down here. Tentatively, the answer is negative.

07 01 42 39 LMP Okay. Just trying to help.

07 01 42 42 CDR Jack, I think we are pitching up b. holding inertial attitude at about the rate we would want to torque up, so I guess we can just hang in here on this perigee.

07 01 42 51 CC Okay.

07 01 52 54 CDR It's just about going through the same window.

07 01 42 59 CDR We lucked out. We went right through SCS at the right time.

07 01 43 05 CC Roger.

07 01 43 12 CDR Don't let Shaffer get credit for that one, whatever you do.

07 01 43 17 CC (Laughter) Roger.

07 01 44 22 CC Apollo 7, Houston.

07 01 44 25 CDR Go ahead.

07 01 44 27 CC Walt, on your EKG problem: do you think you will be able to restore the harness today?

07 01 44 34 LMP I don't know how I'm ever going to restore it. We have taken a good look at the leads. I was told last night it was probably the sternal leads; all my connections are made up. Wally took a look at them; it looks like we've got all the connections made. The only thing I can think of is a broken wire inside the lead someplace. Are you getting anything on me at all?

07 01 44 55 CC Just respiration, Walt.

07 01 44 58 CDR Jack, I would like to check with you. Do you know which sternal lead it is? We could change the sensor, but that's about all. The wiring is intact.

07 01 45 07 CC Okay.

07 01 45 08 CDR All of it.

07 01 45 20 CDR Okay. Might get those people to go to work on that Mickey-Mouse wiring. It is not up to the standards as far as durability is concerned for 7 or 8 days.

07 01 45 30 CC Okay. Wally, they tell me that should work.  
And, Walt, they say you might try to make the  
same fix that Wally did on his.

07 01 45 45 CDR Do you want to put his - what you want to do -  
you going to give up EKG and keep respiration  
only?

07 01 45 54 CC Stand by, Wally.

07 01 45 55 LMP That's what you've got on me now, I think.

07 01 46 08 CC Okay. Walt, they want to swap respiration for  
EKG leads.

07 01 46 20 CDR You mean you want to swap the plug connectors  
on the amplifiers, is that it? Signal condi-  
tioners?

07 01 46 31 CC That's right.

07 01 46 32 CDR Okay. We will do that. It may take a little  
while.

07 01 46 36 LMP If I can do it, I'll unhook the yellow one and  
hook it to the white one, and vice versa. I've  
got - what? Yes, I've got enough wire here so  
that they might even reach. Retool deal ...

07 01 46 48 CDR I think he could reach over to me with it with  
the wire he has.

07 01 46 52 CC Copy that.

HUNTSVILLE through ANTIGUA (REV 108)

07 01 47 58 CDR Houston, Apollo 7.

07 01 48 00 CC Go ahead.

07 01 48 02 CDR I'd like to update you on my water chlorination system. We remarked on a discrepancy there last night. The container that holds the ampules - that have interfaces with the pen plunger that penetrates the water servicing valve: at interface, there is a brown fluid all around the system outside the -

07 01 48 47 CC Apollo 7, Houston.

07 01 49 14 CC Apollo 7, Houston.

07 01 49 16 CDR Roger. Did you read all right?

07 01 49 18 CC Negative. Wally, we got a handover just about that time. Before we continue, could we - we got a report that the heater is on. Could you read out your AC 1 phase A, B, and C again?

07 01 49 32 LMP 114-1/2, 115-1/2, 114-1/2.

07 01 49 39 CC Roger. Copy that.

07 01 49 41 LMP Are you getting anything on me now?

07 01 49 44 CC And, Wally, we got pretty much the same report on the chlorination system now. Have there been any changes from last night?

07 01 49 55 CDR Negative. We're just about to watch to see it grow. That goop seems to be rocking in the middle.

07 01 50 02 CC Okay. Copy that.

07 01 50 04 CDR That fitting in the water system was scheduled for chlorine later today.

07 01 50 10 CC Okay. We copy that.

07 01 54 22 CC Apollo 7, Houston.

07 01 54 26 CDR Roger.

07 01 54 28 CC Wally, we had a premature data LOS there. Could we get you to go your up-telemetry command switch to RESET NORMAL?

07 01 54 37 CDR I would like to restate on the chlorination that we find that every other day is satisfactory. We have no objection to that.

07 01 54 44 CC Okay. Copy that. Wally, do you think that you could wipe off this brown spot?

07 01 54 49 CDR I guess we could. I'm not sure what it is, though. That's why.

07 01 54 54 CC Okay.

07 01 54 56 SC That's what I would do in my own home, but I'm not sure about the correct input in this biomedical log. There's really nothing for it in my book up here.

07 01 55 10 LMP If we wipe it off, who is going to get a chance to take a look at it afterwards to see what it was?  
ASCENSION (REV 108)

07 02 06 00 CC Apollo 7, Houston through Ascension.

07 02 06 05 LMP Yes, this is Apollo 7. How do you read?

07 02 06 13 CC Roger, Walt. Standing by.

07 02 06 15 LMP Roger. Can you check your log and find out what time I turned the H<sub>2</sub> 1 - H<sub>2</sub> 2 heater off this morning?

07 02 06 23 CC Wilco.

07 02 06 28 CC Apollo 7, Houston.

07 02 07 31 LMP Go, Jack.

07 02 07 32 CC Roger. The best data we had there was 167 plus 53.

07 02 07 39 LMP Thank you. And what are the readouts now on H<sub>2</sub> 1 and H<sub>2</sub> 2 quantities?

07 02 08 03 CC Including - 39.4, Walt, and 37.6.

07 02 08 10 LMP Okay. They seem to be coming apart. If that's a little bit too slow, I can turn the fans off in tank 2. Just fix it up occasionally.

07 02 08 21 CC Just hold what we got, Walt.

07 02 08 25 LMP Okay.

07 02 10 49 CC Apollo 7, Houston. One minute LOS Ascension; Tananarive at 170 plus 20.

TANANARIVE (REV 108)

07 02 20 50 CC Apollo 7, Houston through Tananarive. Standing by.

07 02 29 43 CC Apollo 7, 1 minute LOS Tananarive; Mercury at 46.

MERCURY through GUAM (REV 108)

07 02 48 40 CDR Houston, Apollo 7. Standing by.

07 02 48 45 CC Roger. Apollo 7, Houston.

07 02 48 47 CDR Not gonna try you anymore.

07 02 48 50 CC Roger. Relative to Walt's question on the SPS heater after the cold soak test: we do not - do not want to activate these heaters; we want to look at the data first.

07 02 49 05 CDR Understand.

07 02 49 08 CC And, Wally, we would like to do a fuel cell O<sub>2</sub> purge at 171 plus 30.

07 02 49 18 CDR Roger.

07 02 49 35 LMP Hey, Jack, how are you reading my BIOMED now?

07 02 49 41 CC Stand by, Walt.

07 02 49 50 CC Walt, you did good work. We have good BIOMED data.

07 02 49 55 LMP All of it, or just EKG's, or what?

07 02 50 00 CC Just EKG.

07 02 50 04 LMP Is my heart still pumping?

07 02 50 07 CC Affirmative.

07 02 50 09 LMP I feel relieved now.

07 02 50 12 CDR That thing is not going to work very long, either; it's just taut right across his stomach.

07 02 50 17 CC Roger.

07 02 50 36 CDR Do you have any more words of wisdom on the chlorine injector?

07 02 50 43 CC Stand by, Wally.

07 02 50 45 CDR We aren't scheduled to use it tonight, anyway, but they can just go ahead and think on that one for a while.

07 02 51 57 CC Apollo 7, Houston.

07 02 51 59 CDR Go.

07 02 52 01 CC Wally, we are expecting to chlorinate tonight since we didn't do it last night, but relative

to the brown spot, we are trying to get more data on that to pass up to you.

07 02 52 13 CDR I checked my log - I think I did last night, and that's where we got the brown spot.

07 02 52 22 LMP Yes, last night we did chlorinate.

07 02 52 29 CC Say again, Walt.

07 02 52 30 CDR We chlorinated last night at 150 hours, approximately.

07 02 52 35 CC Okay.

07 02 52 41 CDR We're giving you a lot of lead time on the problem.

07 02 52 44 CC Roger. Thank you.

07 02 52 46 CDR You can check with any other country you'd like.

07 02 53 06 CC Okay. Wally, we concur with your chlorination; we won't chlorinate tonight.

07 02 53 11 CDR Roger. You just might play games with one of those injectors and see what the heck is down there.

07 02 53 17 CC Good idea.

07 02 53 18 CDR It's between the injector and the deal that hooks up with the spacecraft; there's a pin in it.

07 02 53 26 CC Okay.

07 02 53 28 CDR I change it. The place where the small end of the chlorine ampule is pierced; that's where the brown stuff collects.

07 02 53 38 CC Roger. Copy that.

07 02 53 40 CDR Very good.

07 02 53 42 LMP We've got almost 48 hours; we are at 24 hours, now.

07 02 54 58 CC Apollo 7, Houston.

07 02 55 00 LMP Go ahead, Jack.

07 02 55 02 CC Walt, sometime at your convenience, we would like a command module RCS temp readout.

07 02 55 07 LMP Roger. I'll get that shortly.

07 02 55 20 CC Apollo 7, opposite omni.

07 02 55 28 LMP Roger. We are ready now.

07 02 55 32 CC Roger.

07 02 55 52 LMP Okay. 5A - 5C 5 volts, 5D 5 volts, 6D 5 volts, 6C 5 volts, 6 Baker 5 - wait - 6 Baker 5 volts, 6 Able 5 volts.

07 02 56 14 CC Roger. Copy those, Walt.

07 02 56 18 CDR Jack, what's the cutoff on this cold soak test? Have we reached it yet?

07 02 56 26 CC Wally, it's about 171 10.

07 02 56 31 CDR Okay. That's the same cutoff we had - it was started later than original.

07 02 56 42 CC Okay. There's a correction, Wally. It's 171 plus 22 because we started late.

07 02 56 47 CDR Okay.

HAWAII (REV 108)

07 03 05 10 CC Apollo 7, Houston through Hawaii.

07 03 05 16 CDR We report all quiet here.

○

07 03 05 18

CC

Roger. Donn, when you go to power down today, just as a reminder, don't forget to deactivate that DAP.

07 03 05 33

CDR

Got that. We've got Donn on the rack, and we know how to do that stuff.

07 03 05 39

CC

Roger. We were just worried about a jet fire.

07 03 05 42

CDR

Roger. The number 1 window is now collecting condensation on the lower edge, the edge nearest the grid cell. There's some large specks as long as three-eighths of an inch and about an eighth of an inch wide on it. Most of the specks are about a thirty-second of an inch in diameter; a lot of dust collection on the outer surface of the inner pane and the condensates on the inner surface of the outer pane. The little specks are from the dump system on the outer surface of the outer pane. Number 2 window has the sun on it now, and the smoke effect I don't think has increased any, but as we originally reported, that's probably from ~~lower~~ jettison. Guess the window looks quite good. Number 3 window, the hatch window, collected so much condensates, it's almost smoothed over. There is a circle about 2 and 1/2 inches in diameter that has the same crystal structure; this is all collected on the inner surface of the outer pane. That's a very bad show on that

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window. Number 4 window is about the same as number 2; and number 5 window, the side window, is also collecting condensate on the inner surface of the outer pane but does not have the dump particles collecting on it.

07 03 07 15 CC Okay. Wally, that was a real fine window status.

07 03 07 30 CDR We've written in our log that beards are no good. Did you copy that?

07 03 07 43 CC Say again, Wally.

07 03 07 45 CDR We've entered in our logs that beards are no good.

07 03 07 54 CC I couldn't read it.

07 03 07 57 CDR We wrote in our log - our flight plan log - that facial beards are no good.

07 03 08 04 CC I copied that.

07 03 08 32 CDR At 7, we're 21 hours and 22 minutes - we might as well start you boys cracking on figuring how much fuel we have left, and I'll get our DELTA for these two DTO's.

07 03 08 44 CC Okay. Wally, in work.

07 03 08 46 CDR Roger. And we noticed a gross change in temperature; it looks like it's going up.

07 03 08 54 CC We concur.

07 03 08 56 LMP The SPS propellant tank temperature is now reading 68.

07 03 09 00 C Roger.

07 03 09 03 LMP Jack, how about a hydrogen 1 quantity and hydrogen 2 quantity?

07 03 09 13 CC Okay. Walt, the hydrogen, 39.0, 37.2.  
07 03 09 23 LMP Roger. Pitch rate ... think that kept up.  
07 03 09 31 LMP We estimate 4 more days.  
07 03 09 35 CC I couldn't read that, 7.  
07 03 09 37 LMP We estimate 4 more days ...  
07 03 09 47 CC Roger. Copy that.  
07 03 09 49 CC Hey, Wally, a couple of quick questions on the  
FTI problem that you had back: did the FTI flip  
occur with the ORDEAL and GDC operating on ball  
number 1?

## HUNTSVILLE (REV 108)

07 03 10 18 CDR ... you now? ... GDC, and we'll see how long it  
lasts.  
07 03 10 24 CC Okay. Wally, your answer started just at the  
handover to the Huntsville. Could you say again?  
07 03 10 31 CDR We have our GDC on ball 1. We're doing a leak.  
07 03 10 37 CC Was ORDEAL and GDC operating at the same time  
on ball number 1?

## GUAYMAS (REV 108)

07 03 17 21 CC Apollo 7, Houston.  
07 03 17 24 CDR Loud and clear.  
07 03 17 25 CC Roger. Wally, here is a chart value for your  
RCS fuel.  
07 03 17 31 CDR Go ahead.  
07 03 17 33 CC Roger. 614 quad A is still the limiting quad,  
but still above all RCS redlines.

07 03 17 42 CDR Very good.

07 03 17 45 CC And, Walt, could you give us a batt C readout when you have a minute?

07 03 17 53 LMP 36.2.

07 03 17 55 CC Roger. Copy. And your hydrogen imbalance is improving now. We've gone from 3.4 to 1.8 difference.

07 03 18 06 LMP Roger.

07 03 18 15 CC Wally, I missed some of the answers to the question I asked about the FTI problem you had. Did this 180 degree flip occur when the ORDEAL and the GDC were on ball number 1?

07 03 18 29 CDR Negative. I've now got a ... You've got FTI ... on ball number 1. I'll give it ... ball number 1. Here it comes, GDC. Do you read?

07 03 18 41 CC We aren't getting the data right now, Wally.

07 03 18 44 CDR You're not?

07 03 18 47 CC Negative. We've got a low antenna angle here at Guaymas.

07 03 18 51 CDR Oh. I'll hold off here a second.

07 03 19 11 CC Okay. Wally, it doesn't look like we are going to get any data at all here at Guaymas because of the keyhole.

07 03 19 20 CDR I've got about a 172 pitch, slipping to an FTI on number 1, and the ball slips right over to 022 pitch, so I can't seem to get GDC to lock on ball number 1.

07 03 19 40 CC Okay.

07 03 19 42 CDR But it's fine on number 2.

07 03 19 44 CC Does this flip occur just at the time that  
you're switching GDC to ball number 1?

07 03 19 51 CDR That's correct.

07 03 19 52 CC Okay. Copy.

07 03 19 54 CDR All this is clocked now. Do you want the data,  
Jack?

07 03 20 00 CC Okay. We're just about to lose you at Guaymas;  
we'll pick you up at Tananarive at 56.

07 03 20 06 CDR Roger.

TANANARIVE (REV 109)

07 03 57 37 CC Apollo 7, Houston through Tananarive.

07 04 06 44 CC Apollo 7, Houston. One minute LOS Tananarive;  
Mercury at 172 plus 21.

MERCURY (REV 109)

07 04 21 30 CC Apollo 7, Houston through Mercury.

07 04 21 36 CDR Roger, Jack.

07 04 21 38 LMP Hey, Jack, I would like to get a flight plan up-  
date on when they plan on activating the primary  
water boiler and for how long.

07 04 21 47 CC Okay, Walt, in work. And, Walt, here are some  
redlines I used on your RCS that you might be  
interested in.

07 04 21 58 LMP What are they on, Jack? Redlines for what?

07 04 22 06 CC Your RCS redlines. In SCS deorbit, we'll use 558 pounds as the redline. Your DAP redline is 487, and your hybrid redline is 252.

07 04 22 24 LMP Thank you.  
GUAM (REV 109)

07 04 24 08 LMP Houston, Apollo 7. Over.

07 04 24 11 CC Go ahead, Apollo 7.

07 04 24 13 LMP Okay. I'd like to give you a status report of the remaining film we have on board.

07 04 24 19 CC Okay. Go ahead.

07 04 24 21 LMP First, the 70mm Pan-X: we have 121 frames remaining; S0368, 20 frames; S0121, 48 frames. For the 16mm on the 368, there is 2 and 1/3 magazines; on the 168, there is four magazines. Over.

07 04 24 53 CC Copy that, Walt.

07 04 25 10 LMP I am standing by for -

07 04 25 20 CC We'll be back with you in a minute on that primary evap.

07 04 26 34 CC Walt, we'll get back to you at Hawaii on the primary evaporator.

07 04 26 41 LMP Roger.

07 04 31 08 CC Apollo 7, Houston. We are about to lose you at Guam; Hawaii at 40.

07 04 31 14 LMP Roger, Jack.  
HAWAII (REV 109)

07 04 40 43 CC Apollo 7, Houston through Hawaii.

07 04 40 46 LMP Roger, Jack.

07 04 40 48 CC Roger. Walt, I have your block data number 19.

07 04 41 32 LMP Houston, Apollo 7. Do you read?

07 04 41 36 CC Roger, 7. We've got your block data. Are you ready to copy?

07 04 41 40 LMP Ready to copy. Go. I'm loaded with blocks now.

07 04 41 44 CC Roger. 111 dash 3 Alfa plus 295 plus 1389 175 plus 17 plus 19 2808, 112 dash Charlie plus 195 plus 1520 177 plus 00 plus 44 2680, 113 dash Alfa Charlie minus 025 minus 0090 177 plus 42 plus 42 5628, 114 dash Alfa Charlie plus 025 minus 0239 170 plus 14 plus 47 5297, 115 dash Alfa Charlie plus 122 minus 0310 180 plus 48 plus 41 4637, 116 dash 2 Alfa plus 243 minus 0269 182 plus 26 plus 21 3648. End.

07 04 44 31 LMP Forgot 164. Okay. Readback follows: 111 dash 3 Alfa plus 205 plus 1389 175 plus 17 plus 19 2808, 112 dash 3 Charlie plus 195 plus 1520 177 plus 00 plus 44 2680, 113 dash Alfa Charlie minus 025 minus 0090 177 plus 42 plus 42 5628, 114 dash Alfa Charlie plus 025 minus 0239 179 plus 14 plus 47 5297, 115 dash Alfa Charlie 122 minus 0310 180 plus 48 plus 41 4637, 116 dash 2 Alfa plus 243 minus 0269 182 plus 26 plus 21 3648. Over.

07 04 45 39 CC Roger. On the second block, Walt, that's 112 dash Charlie Charlie.

○ 07 04 45 50 LMP Roger. 112 dash Charlie Charlie, and tell John Llewellyn that I've got a whole book full of unused blocks here now.

07 04 45 59 CC Copy that. Okay.  
HUNTSVILLE (REV 109)

07 04 46 26 CC Apollo 7, Houston.

07 04 46 30 LMP Go ahead, Jack.

07 04 46 33 CC Okay. Walt, you're pretty weak, but on your question on the primary evaporator: we would like to return the primary evaporator to AUTO.

07 04 46 44 LMP Going to AUTO now. Shall I bring it into operation as we've been doing before? I'll go ahead and bring it on the line as we have been.

○ 07 04 47 18 CC Okay. Walt, if you'll just place that primary evaporator on AUTO, it'll cycle by itself, and we're expecting a cycle sometime tonight.

07 04 47 30 LMP Well, it's liable to also dry up again sometime tonight. If that's okay with you, I can go ahead and bring it on down, but okay going to AUTO.

07 04 47 40 CC Roger. Copy.

07 04 47 45 CC And, Walt, we've been doing some discussion down here on a possible manual reserivcing procedure for the secondary evaporator in the event it dries out. We've run some tests and have come up with a procedure if you want to copy it.

○

07 04 48 05 LMP Is this something that somebody's dreamed up after all these months? I've been told that you cannot reservice the secondary evaporator.

07 04 48 13 CC That is correct, and we've come up with a procedure to do it.

07 04 48 19 LMP I don't know how everybody gets so smart in one week's time, but I'll go ahead and copy it. How long is it?

07 04 48 24 CC Oh, four steps.

07 04 48 26 LMP Very long steps?

07 04 48 28 CC No, real short.

07 04 48 30 LMP Hit me with it.

07 04 48 32 CC Okay. You want to turn the evaporator water control switch secondary to AUTO.

07 04 48 41 LMP That's where it is anyway, isn't it?

07 04 48 43 CC Roger. Then you want to turn your secondary coolant loop EVAP switch to EVAP for 5 plus or minus 1 seconds, then RESET for 10 plus or minus 1 seconds.

07 04 40 31 CC Roger. You copy that, Walt?

07 04 40 34 LMP I got evaporator water control secondary to AUTO which is where it normally is when it's running. Go to the EVAP position for 5 seconds and RESET for 10 seconds - I assume immediately afterwards, is that correct?

07 04 49 46 CC Affirmative. 5 plus or minus 1 seconds, then  
RESET for plus or minus 1 second. Okay. Then  
repeat this - this step above for 40 - for a  
recommended 40 cycles.

07 04 50 00 LMP Forty times I do that, right?

07 04 50 02 CC Roger. Forty cycles is the desired, but 20 cycles  
is the minimum number needed to bring the evaporator  
on the line. It'll give you three-tenths of  
a pound, 20 cycles will.

07 04 50 16 LMP Okay. But I'd just like to go on record here as  
saying that people that dream up procedures like  
this after you lift off have somehow or another  
been dropping the ball for the last 3 years if  
they have a procedure where you can reservice.  
It looks kind of Mickey Mouse, but I'll stand by  
to do it if I have to.

07 04 50 36 CC Okay. We just wanted to get you thinking about  
it in case you needed it.

07 04 50 43 LMP What? Did you read me then?

07 04 50 45 CC Affirmative, Walt.

07 04 50 46 LMP Okay. I'll do this Mickey Mouse procedure if  
necessary, but not until LOS. We'll be saying  
a lot further in the flight plan.

07 04 50 54 CC Okay. We've got it. We're about to lose you  
over the Huntsville, Walt. We'll pick you up at  
Tanarive at 32, 173 plus 32.

## TANANARIVE (REV 110)

07 05 33 11 CC Apollo 7, Houston through Tananarive.  
07 05 33 17 CDR Affirmative.  
07 05 36 44 CC Apollo 7, Houston.  
07 05 41 22 CC Apollo 7, Houston. One minute and a half to LOS  
Tananarive; Mercury at 57.

## MERCURY (REV 110)

07 05 58 28 CC Apollo 7, Houston through Mercury.  
07 05 58 33 CDR Roger. Loud and clear.  
07 05 58 34 CC Roger. Loud and clear.  
07 05 58 38 CDR Ron, would you check my BIOMED signal while I'm  
on, please?  
07 05 58 45 CC Roger. Coming through good.  
07 05 58 50 CDR Thanks. Would you - check the oxygen, will you?  
07 05 58 56 CC Roger. O<sub>2</sub> manifold pressure now 106.  
07 05 59 00 CDR 106. Roger.  
07 05 59 03 CC Now it's 102.  
07 05 59 05 CDR 102. We're at GO.  
07 06 00 08 CC Roger. Apollo 7, Houston.  
07 06 00 12 CDR Go ahead.  
07 06 00 14 CC Roger. You might tell Walt that his spark plug  
changer has some information here when he gets  
a chance to troubleshoot his BIOMED.  
07 06 00 24 CDR Roger. He's got a good chance because he's got  
his hood open now.

○ 07 06 00 34 CC Roger. We'd like to confirm that the yellow lead is connected to the blue signal conditioner at this time.

07 06 00 43 CDR Okay. It's not hooked up right now. Yellow lead to blue conditioner. And Donn Eisele has the same break I have. It's identical.

07 06 00 57 CC Roger.

07 06 00 58 CDR So he'll rig it up the same way I am.

07 06 01 03 CC That's fine.

07 06 01 14 CC If Walt has the yellow lead to the blue conditioner, we would like to disconnect the side sensors at the pin connectors and then connect the yellow lead to the upper and lower chest sensors.

○ 07 06 01 33 CDR Okay. And I just disconnect the ... or whatever the heck they are - auxiliary.

07 06 01 39 CC That's affirmative; disconnect the auxiliary.

07 06 01 42 CDR Okay. I'll have him remove those sensors then as long as he is going to disconnect them.

07 06 01 45 CC Affirmative. And he can also --

07 06 01 46 CDR Just keep the two externals and run them to the yellow pin to the blue conditioner.

07 06 01 52 CC That's affirmative; yes.

07 06 01 54 CDR Okay. Will do. We're changing our skivvies tonight.

○ 07 06 02 00 CC Roger.

07 06 04 37 CC Apollo 7, Houston. Thirty seconds LOS; Hawaii at 16.

07 06 04 43 CDR Roger. We'll ... your spark plugs.

07 06 04 47 CC Roger.  
HAWAII (REV 110)

07 06 16 03 CC Apollo 7, Houston through Hawaii.

07 06 16 06 LMP Roger. Loud and clear.

07 06 16 08 CC Roger.

07 06 16 54 CC Apollo 7, Houston.

07 06 16 57 CDR Go ahead.

07 06 16 58 CC Roger. Is the urine dump heater still in main A?

07 06 17 04 CDR That's affirmative.

07 06 17 06 CC Roger. And which suit circuit accumulator is now in operation?

07 06 17 17 CDR Number 1 - wait a minute; stand by. Number 1, yes.

07 06 17 24 CC Roger.

07 06 17 43 CDR We'll leave that urine dump heater where it is; it's been working like a charm.

07 06 17 50 CC Roger. It kind of bounces up and down here on the temperature, and we're just watching it; we're curious which one has been working.

07 06 17 58 CDR A only.

07 06 17 59 CC Roger.

07 06 18 34 CDR Any new news back that way?

07 06 18 42 CC Roger. I've got a man working on it now.

07 06 18 44 CDR Okay.

07 06 19 57 CC Apollo 7, Houston. Request O<sub>2</sub> tank 2 fan cycle on for 5 minutes, then off.

07 06 20 04 CDR Okay.

07 06 20 44 CDR LMP's anxious to try his new fix. We'll give it to you, give you the data.

07 06 20 52 CC Say it again.

07 06 20 54 CDR Roger. Walt's hooked up. You can try him for an EKG, or whatever it is.

07 06 20 58 CC Roger. We're looking at it.

07 06 21 26 CDR Ron, ask ~~Sir~~ John if we can move the upper sternal down about an inch to relieve the strain on the lead.

07 06 21 33 CC That's affirmative.

07 06 21 35 CDR Okay. What's the reading we're sending you, then?

07 06 21 37 CC Roger. It's not looking very good yet. We'll check it again at Ascension.

07 06 21 42 CDR Okay. That's the two sternal leads on the yellow pin connector to the blue signal conditioner.

07 06 21 51 CC Roger.

07 06 21 53 CDR Okay.

07 06 22 14 CC LOS. We'll pick you up at Ascension at 57.

07 06 22 18 CDR Roger. Fifty-seven, Ascension.

ASCENSION (REV 111)

07 06 57 10 CC Apollo 7, Houston through Ascension. Standing by.

## TANANARIVE (REV 111)

07 07 12 00 CC Apollo 7, Houston, Tananarive. Low elevation pass.

07 07 12 06 CDR Roger. Go ahead.

07 07 12 07 CC Roger. Read you loud and clear.

07 07 12 10 CDR ...

07 07 12 20 CC And that didn't come through.

07 07 12 24 CDR Roger. ... Did you have any news for us? We heard you at Ascension, but you couldn't hear us.

07 07 12 33 CC Roger. Copy that.

07 07 12 53 LMP Ron, do you read us?

07 07 12 55 CC Affirmative.

07 07 12 57 LMP Hey, Ron, can you give me a readout on hydrogen tank 1 quantity and hydrogen tank 2 quantity?

07 07 13 03 CC Roger. H<sub>2</sub> tank 1 37.4, H<sub>2</sub> tank number 2 36.8.

07 07 13 16 LMP Come to think of it, give Donn a call ...

07 07 13 26 CC Apollo 7, Houston. Say again.

07 07 13 30 LMP Give Donn a call when they've balanced and have him turn both heaters on the hydrogen tanks to AUTO.

07 07 14 02 CC Thirty seconds LOS; we will call Donn when they get balanced. Mercury at 33.

07 07 14 11 CDR Roger.

MERCURY (REV 111)

07 07 36 01 CC Apollo 7, Houston through Mercury. Standing by.

07 07 36 05 CMP Roger.

07 07 36 06 CC Roger. Loud and clear.

07 07 38 26 CMP Houston, Apollo 7.

07 07 38 28 CC Houston. Go.

07 07 38 30 CMP Roger. This is the CMP up now --

07 07 38 32 CC Roger. Good morning.

07 07 38 33 CMP -- and I'd like to give you a little status report.

07 07 38 35 CC Roger.

07 07 38 37 CMP Okay. First of all, starting last night, when I went to sleep about 168 hours, log me 30 clicks of water, two aspirin, and one Lomatil.

07 07 38 49 CC Roger.

07 07 38 53 CMP The LMP wants to add 30 clicks of water and wishes to announce that he is now pure in sleep with clean skivvies on.

07 07 39 01 CC Beautiful.

07 07 39 05 CMP The CDR is - the CDR is recording 20 clicks of water, and he wished to announce that he has his backup upbacks on also.

07 07 39 27 CC Roger.

07 07 39 58 CC About 1 minute LOS; Redstone at 05.

07 07 40 30 CMP Hey, Ron, you got any hot news for us?

07 07 40 33 CC Roger. The paper said your SPS burn was the mightiest maneuver ever made by a manned spacecraft.

07 07 40 40 CMP That's right.

07 07 40 42 CC Yes. The stock market is at its highest level since February of '66.

## REDSTONE (REV 111)

07 08 06 32 CC Apollo 7, Houston through Redstone.

07 08 06 35 CMP Roger, Houston.

07 08 06 37 CC Roger. Loud and clear. Say, Donn, on all of our discussion on the DELTA-V meter there today, your EMS counter, we never did get a residual EMS DELTA-V after the burn today. Do you happen to recall what that was?

07 08 07 02 CMP I'm sorry. Sure don't, Ron. We couldn't see it very well; it was so bright in here that those numerics didn't show up very well.

07 08 07 13 CC Roger.

07 08 08 44 CMP Hey, Ron. Could you give me an orbital backup date please and also find out how much difference the period is between our orbit and the one that was portrayed on our orbit map?

07 08 08 59 CC Wilco, Donn. Apollo 7, Houston. Opposite omni.

07 08 11 30 CC Apollo 7, Houston. I have a map update for you.

07 08 11 35 CMP Roger. Go ahead.

07 08 11 37 CC Roger. REV 111, GET 175 plus 15 plus 00, longitude 41.4 east.

07 08 12 01 CMP Okay. 175 plus 15 plus zeroes and then 414 east?

07 08 12 07 CC Affirmative. 41.48 east.

07 08 12 08 CMP Okay. Did you find out about the orbit period?

07 08 12 19 CC Roger. We're working on it. The period is 90 something - let me look it up here - the period is 90 plus 42 now.

07 08 12 34 CMP Period is 90 plus 42.

07 08 12 37 CC Affirmative.

07 08 12 39 CMP I see. I don't know what it is on this map.  
I guess I can figure it out.

07 08 12 48 CC We'll get the information for you. And, Donn,  
did you get the fix on the BIOMED harness that  
we passed up for the rest of the guys?

07 08 12 58 CMP Oh, yes. To switch the plug to the other side.

07 08 13 02 CC Affirmative.

07 08 13 04 CMP Yes. I did get that; I haven't done it yet.  
I will in a little bit.

07 08 13 07 CC Roger.

07 08 13 40 CC Apollo 7, Houston. Thirty seconds LOS; Ascension  
at 31.

07 08 13 45 CMP Roger.

07 08 13 56 CC And - 7, Houston - your map is a 90-minute period.

07 08 14 03 CMP Say again.

07 08 14 04 CC Ninety plus 00 period on your map.

07 08 14 08 CMP Roger. I understand. Thank you.  
ASCENSION (REV 112)

07 08 32 07 CC Apollo 7, Houston through Ascension. Standing by.

07 08 32 12 CMP Okay.

07 08 32 14 CC Roger.

07 08 32 45 CMP Ron, are the skies pretty in Houston?

07 08 32 48 CC Say it again, Donn.

07 08 32 52 CMP How's the weather there?

0 07 08 32 57 CC Roger. The weather is beautiful.

07 08 33 01 CMP I just looked outside. There's a beautiful planet up here over Scorpio. I don't know which one it is, but it sure is bright.

07 08 33 11 CC Roger.

07 08 33 16 CMP May be Jupiter.

07 08 33 26 CC We'll check and let you know.

07 08 33 36 CC 7, Houston. The good doctors say, "thank you."

07 08 33 44 CMP That's what he wanted, right?

07 08 33 46 CC Affirmative.

07 08 37 50 CC Apollo 7, Houston. Opposite omni.

07 08 37 53 CMP Roger.

07 08 38 14 CMP Houston, Apollo 7.

⊖ 07 08 38 16 CC Houston. Go.

07 08 38 18 CMP Roger. A couple of days ago we did a P23 star-to-lunar landmark exercise. I just wonder if the data got down to the ground and if they were happy with it? We only got a chance to do one or two, and I didn't know how they came out.

07 08 38 36 CC Roger. We'll check it.

07 08 38 39 CMP Thank you.

07 08 39 11 F Ron, we were going to get the SCS and G&N control mode checks, and Donn's awake now. We've got a couple of minutes. It might be worthwhile to try and get that one done. Find out what he has completed from his log.

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0 07 08 39 32 CC Apollo 7, Houston.  
07 08 39 36 CMP Go.  
07 08 39 37 CC Roger. Have you had a --  
07 08 39 38 CMP Go ahead, Ron.  
07 08 39 39 CC Have you had a chance to give us a rundown on  
the SCS and G&M control modes, how many you have  
completed?  
07 08 39 48 CMP Yes; stand by. That's right. I owe you that  
from yesterday.  
07 08 39 51 CC Roger.  
07 08 40 47 CC 7, Houston. About 1 minute to LOS. Venus is  
fairly close to Scorpio at this time.  
07 08 40 53 CMP Oh, it's Venus.  
07 08 40 55 CC Roger.  
07 08 40 56 CMP Okay. That's why it's bright.  
07 08 41 03 CMP Ron, I'll give you this rundown when we come  
over the next station, okay?  
07 08 41 07 CC Roger.  
07 08 41 12 CC It will be Mercury at 09.  
07 08 41 15 CMP Roger.  
MERCURY (REV 112)  
07 09 10 04 CC Apollo 7, Houston, Mercury. Standing by.  
07 09 10 10 CMP Roger. Houston, Apollo 7.  
07 09 10 13 CC Roger. Loud and clear.  
07 09 10 34 CMP Ron, I'm looking over this scorecard here on  
attitude control modes, and we've got them all

checked off except for some of the various rates, particularly the high rates in automatic maneuver for G&N.

07 09 10 54 CC Roger.

07 09 10 58 CMP If you like, I can go down the list for you. You want the details, or you just want a total score-card?

07 09 11 06 CC If you have time, we would like to go down the list. We're trying to figure out how much RCS fuel we need to allocate for the rest of them.

07 09 11 15 CMP Okay. Go down G&N control modes. Wally has checked off - or one of us did - MAX deadband attitude holds for 20 to 30 minutes. I believe we did that in possibly P20 during rendezvous. Also, the minimum deadband we used during SPS burns which is attitude hold G&N.

07 09 11 41 CC Roger.

07 09 11 43 CMP Automatic maneuvers; we do those. We do an automatic trend maneuver for every burn. It also took automatic maneuvers in P20 during rendezvous.

07 09 11 53 CC Roger.

07 09 11 55 CMP Manual rate commands have been used to trim the roll angles at, you know, just prior to the last AUTO trend for a burn, and we may have used it at other places. I can't recall offhand. I think

we did during such things as that P23 tracking where we went to attitude hold for a little while and then DAP.

07 09 12 18 CC

Roger.

07 09 12 19 CMP

We used the minimum impulse controller for that - the sextant calibration and for P23. We used RCS translation control for the rendezvous, and it was a TPI burn. We used a CMC free mode in free axis during the sextant calibration. We made automatic maneuvers at 0.5 and 0.2 degrees per second. We've also made manual maneuvers at those rates. Usually, it takes place during the pre-burn cycle, say 5 to 10 minutes before the burn when we're maneuvering the attitude or holding attitude.

07 09 13 01 CC

Roger.

07 09 13 03 CMP

Okay. On the SPS: during the SPS cold soak we, of course, did the MAX deadband, that was the 4-degree deadband with low rates. We used minimum deadband low rate during rendezvous for attitude hold during braking and line of sight corrections. We used RATE COMMAND at low rate during the same period of time for during rendezvous. We used minimum impulse and ACCEL COMMAND right along. That's our standard maneuver modes; it's of this - it's higher than any other

rate. Translation control: we've done that through one SPS burn and for the initial separation maneuver from the S-IVB. Wally, just before we powered down last night, set the manual to RET mode and said it was satisfactory. We have not done RATE COMMAND HIGH rate, but we'll do so during maneuvers to entry altitude following separation. We also used the maximum deadband 8 degree during the SPS cold soak. And he's got here "minimum deadband high rate during SPS cold soak."

07 09 14 19	CC	Roger. Looks good, then.
07 09 14 23	CMP	I don't know what all they need to know in way of data down there, but as far as we're concerned, we've run it out pretty thoroughly, and very pleased with the various modes, as far as handling qualities. Wally could tell you some more on those, too. We're a little curious as to the fuel consumption on some of them. I think some modes - particularly with the kind of deadband, they're using a little more than we thought they might based on our simulations before we flew.
07 09 14 54	CC	Roger.
		GUAM (REV 112)
07 09 18 05	CC	Apollo 7, Houston.
07 09 18 08	CMP	Roger. Go.

07 09 18 09 CC Roger. Recommend H<sub>2</sub> heaters to AUTO, both tanks.

07 09 18 16 CMP H<sub>2</sub> heaters to AUTO, both tanks. Okay. Evidently, they're balanced up now, right?

07 09 18 22 CC Roger.

07 09 18 24 CMP All right. Hey, Ron, can you get the H<sub>2</sub> tank quantities that you have down there?

07 09 18 41 CC Roger. H<sub>2</sub> tank 1 36.58, tank 2 36.38.

07 09 18 54 CMP Roger. 36.58 and 36.38.

07 09 18 58 CC Roger.

07 09 20 46 CC Apollo 7, Houston. One minute - or 30 seconds to LOS; Redstone at 40.

07 09 20 52 CMP Roger. Be waiting.

07 09 20 54 CC Roger. Been curious to know, do you notice much of the deviation from perigee to apogee in this orbit?

07 09 21 01 CMP I haven't picked it up yet. I haven't been looking out the window that much, but should expect to see some.

07 09 21 08 CC Roger.

REDSTONE (REV 112)

07 09 40 58 CC Apollo 7, Houston through Redstone. Standing by.

07 09 43 17 CC Apollo 7, Houston through Redstone. Standing by.

07 09 43 22 CMP Roger. Ron, do you read?

07 09 43 23 CC Roger. Read you now.

07 09 43 25 CMP Okay.

07 09 46 43 CC Apollo 7, Houston. I have some flight plan updates, whenever you're ready to copy.

07 09 46 48 CMP Okay. Ron, stand by a minute.

07 09 46 57 CC 7, Houston. Stand by on those flight plans. We'll catch them later.

07 09 47 04 CMP All right.

07 09 49 22 CC Apollo 7, Houston. One minute LOS; Ascension at 07, and it looks like you're exercising or something.

07 09 49 33 CMP Yes. How'd you guess?

07 09 49 38 CC The good surgeons came through.  
ASCENSION (REV 113)

07 10 07 25 CC Apollo 7, Houston through Ascension. Standing by.

07 10 08 50 CC Apollo 7, Houston through Ascension. Standing by.

07 10 08 55 CMP Roger. Houston, Apollo 7. How do you read?

07 10 08 57 CC Roger. Loud and clear, Donn.

07 10 09 00 CMP Right.

07 10 11 47 CC Apollo 7, Houston. Opposite omni.

07 10 12 02 CMP Roger. Stand by, Ron.

07 10 12 05 CC Roger.

07 10 13 29 CC 7, Houston.

07 10 13 34 CMP Roger. Go.

07 10 13 37 CC Roger. Your one and only is currently observing your progress across the plot board.

07 10 13 44 CMP Oh, she is?

07 10 13 46 CC Roger.

0 07 10 13 53 CMP What time is it back there anyway, about eight o'clock?

07 10 13 57 CC Affirmative. 08:15.

07 10 14 00 CMP Oh, yes.

07 10 14 12 CMP Tell her I might drop in in a week or so.

07 10 14 16 CC Roger.

07 10 17 25 CC Apollo 7, Houston. Thirty seconds LOS; Mercury at 45.

07 10 17 32 CMP Roger. I understand.

07 10 17 34 CC Roger.

MERCURY (REV 113)

07 10 46 53 CC Apollo 7, Houston through Mercury.

07 10 46 57 CMP Roger. Houston, Apollo 7.

07 10 47 00 CC Roger. Loud and clear.

07 10 47 04 CC Donn, we'd like to power up the CMC over Mercury or Guam and then power it down again over Redstone.

07 10 47 12 CMP Okay. You want me to do that now?

07 10 47 17 CC Affirmative.

07 10 47 19 CMP All right, going.

07 10 48 17 CMP Say, Ron, would you speak to the visitor you mentioned last pass? Did you take care of that little detail for me?

07 10 48 24 CC Affirmative.

07 10 48 25 CMP All right, thank you.

GUAM (REV 113)

07 10 52 18 CC Apollo 7, Houston.

0 07 10 52 22 CMP Houston, Apollo 7. Go.

07 10 52 24 CC Roger. Your state vectors have been integrated forward, and you can power down at your convenience.

07 10 52 33 CMP Okay. Roger.

07 10 53 19 CC Apollo 7, Houston. Opposite omni.

07 10 53 27 CMP We have it.

07 10 53 29 CC Roger.

07 10 57 25 CC Apollo 7, Houston. Thirty seconds LOS; Redstone at 16.

07 10 57 32 CMP Roger.  
REDSTONE (REV 113)

07 11 17 49 CC Apollo 7, Houston through Redstone.

07 11 17 54 CMP Roger. Houston, Apollo 7.

07 11 17 56 CC Roger. I have your flight plan updates if you are ready to copy.

07 11 18 01 CMP All right. Stand by one.

07 11 18 08 CMP Roger. Go ahead, Ron.

07 11 18 10 CC Roger. At 183 plus 00, "Oxygen fuel cell purge."  
At 186 plus 15, "Canary USB upvoice backup same as 70 plus 25."

07 11 18 48 CMP Will you say it again?

07 11 18 54 CC Roger. At 186 plus 15, add "Canary USB upvoice backup same as 70 plus 25."

07 11 19 22 CMP Roger. Ron, I read it as the same as we did at 70 hours and 25 minutes.

0 07 11 19 26 CC Affirmative.

07 11 19 33 CC At 187 plus 10 delete "CMC power up."

07 11 19 52 CMP Roger. Delete power up at ...

07 11 19 59 CC At 189 add "GDS USB emergency key test same as 98 plus 35."

07 11 20 35 CMP Okay.

07 11 20 39 CC At 189 plus 30, "Prepare TV." At 190 plus 40 to 190 plus 51, "TV pass."

07 11 21 09 CMP Roger. Do you have the TV turnon time?

07 11 21 21 CC Roger. TV turnon time 190 plus 38.

07 11 21 33 CMP Roger.

07 11 21 38 CC Perform all other activities as scheduled.

07 11 21 43 CMP Okay. We've got it.

07 11 21 45 CC Roger. And you might note that you want to move everything up about 5 minutes to match the real-time trajectory.

07 11 21 56 CMP Yes, I see that. Okay. We can do that.

07 11 22 00 CC Roger.

07 11 22 03 CC And, Donn, request pyro batt A and B readouts, and I have some battery ampere-hours.

07 11 22 14 CMP Okay. While the guys are checking, how about taking a look at O<sub>2</sub> tank 2 pressure? It's a little low on our meter up here.

07 11 22 25 CC Roger. O<sub>2</sub> tank 2: we're reading 865.

07 11 22 31 CMP Okay. I guess it's our meter.

07 11 22 38 CC Roger. Your heaters are cut in now, too, Donn.

0 07 11 22 44 CMP Roger.

07 11 23 05 CMP My pyro batt A is 36.9.

07 11 23 09 CC Roger.

07 11 23 10 CMP And pyro batt B is 36.9.

07 11 23 14 CC Roger.

07 11 23 20 CC For batt A you have 29.3, batt B 26.9, and batt  
Charlie 39.5.

07 11 23 53 CMP Roger. Would you read those again? I was off  
the couch pulling the circuit breakers.

07 11 23 58 CC Roger. Sorry. Batt A 29.3, batt B 26.9, batt  
Charlie 39.5.

07 11 24 17 CMP Roger. A and B are a little low, aren't they?

07 11 24 22 CC They're coming down now on schedule, yes.

07 11 24 25 CMP Oh.

07 11 25 57 CC Apollo 7, Houston. One minute LOS; Ascension 44.

07 11 26 03 LMP Roger.  
ASCENSION (REV 114)

07 11 45 31 CC Apollo 7, Houston through Ascension. Standing by.

07 11 46 28 CC Apollo 7, Houston. Look's like we got some more  
gold medals today.

07 11 46 34 CMP Outstanding. Who were they?

07 11 46 40 CC Roger. 400-meter runner Lee Evans and long jumper  
Bob Beaman plus Sue Remick in the women's spring-  
board. Each picked up a gold medal. Evans, by  
the way - -

07 11 47 00 CMP Very good.

0 07 11 47 01 CC Evans, by the way, of San Jose, California: he led a one, two, three sweep in his 400-meter run.

07 11 47 10 CMP Who did that?

07 11 47 12 CC Lee Evans. He got first; two other gents from the United States got second and third.

07 11 47 20 CMP All in the 400 meters?

07 11 47 21 CC Affirmative.

07 11 47 23 CMP Well, that's pretty good. Any relation to you?

07 11 47 30 CC No, but I would like it to be, though.

07 11 47 41 CMP Say, Ron, I was looking at this flight plan at this TV business. It doesn't look to me like that's too good a time to do it because that's right in the middle of the sleep period. I was wondering if it would be all right to do it earlier; they don't have much going on today except this secondary coolant test.

07 11 48 06 CC I see. What you're saying is you like to be on TV.

07 11 48 10 CMP No, I don't care to be on TV, but I don't care to have those guys walking around while I'm trying to sleep either.

07 11 48 15 CC No, we'll check into it and let you know later.

07 11 48 18 CMP I think what it is, they're trying to set this up so it ties in with somebody's TV show. Seems to me you could move it back or move it ahead an hour or two and then tape it, or do you want to do that?

07 11 48 34 CC I don't know about that; I will check into it.



## REDSTONE (REV 114)

07 12 52 30 CC Apollo 7, Houston, Redstone.

07 12 52 34 CDR Roger. Houston, Apollo 7.

07 12 52 37 CC Roger. I have block data number 20 and some flight plan updates.

07 12 52 43 CMP Okay. Before that, I've got a little problem here with my BIOMED. One of the signal conditioners here is getting quite hot, so I took the whole rig off and stowed it. I just thought I better pass that along and see if the Flight Surgeon has got any ideas on what he wants me to do.

07 12 53 00 CC Roger. Which one got hot, your black one or the blue one?

07 12 53 06 CMP I don't know much about them; the one on the right - the farthest to the right.

07 12 53 18 CC Roger -

07 12 53 38 CC Roger. Donn, the one farthest to the right is the power supply.

07 12 53 44 CMP Roger. I don't care which one it is. I'm not going to wear it anymore.

07 12 53 50 CC Roger.

07 12 54 01 CMP Sounds like I triggered the ... notwithstanding all the sweet talk we got about how there weren't any.

07 12 54 11 CC I understand.

07 12 54 17 CMP Roger.

07 12 54 20      CMP      Okay. I'll get this format, and we'll go over the update. Why don't you give me that flight plan part first on the TV?

07 12 54 25      CC      Okay. Everything's the same if you'll check your emergency key test.

07 12 54 33      CC      We'll do it on --

07 12 54 35      CMP      Say again.

07 12 54 36      CC      On the emergency key test.

07 12 54 38      CMP      Yes.

07 12 54 40      CC      We'll do it at 190 plus 35.

07 12 54 45      CMP      Okay.

07 12 54 47      CC      Prepare TV at 188 plus 00. TV turnon at 189 plus 02. TV pass 189 plus 04 to 189 plus 15.

07 12 55 34      CMP      Okay. I got TV ON at 189 02, TV pass from 04 to 15, and you moved the USB key emergency key test over to 190 35.

07 12 55 47      CC      Roger.

07 12 56 03      CMP      Okay.

07 12 56 10      CC      Now I have block data when you're ready to copy.

07 12 56 18      CMP      Go ahead with the block data, Ron.

07 12 56 20      CC      Roger. 117 dash 1 Charlie plus 224 minus 0552  
183 plus 54 plus 59 3833 118 dash 1 Alfa plus  
277 minus 0600 185 plus 31 plus 45 3310, 119 dash  
1 Bravo plus 303 minus 0600 187 plus 12 plus 18  
2973, 120 dash 1 Alfa plus 282 minus 0702 188  
plus 54 plus 08 2841, 121 dash 1 Alfa plus 225

minus 0630 190 plus 35 plus 19 3477, 122 minus  
4 Alfa plus 298 minus 1620 193 plus 09 plus 09  
3088. Houston. Over.

07 12 58 53 CC Apollo 7, Houston. Opposite omni.  
07 12 59 00 CMP Roger. I've got 117 plus 1 Charlie plus 224  
minus 0552 183 54 59 3833, 118 dash 1 Alfa plus  
277 minus 0600 31 45 3310, 119 dash 1 Bravo plus  
303 minus 0600 187 1218 2973, 120 dash 1 Alfa  
plus 282 minus 0602 188 5408 2841, 121 dash  
1 Alfa plus 225 minus 0630 190 3519 3477, 122  
dash 4 Alfa plus 298 minus 1620 193 09 09 3088.  
07 12 59 58 CC Apollo 7, Houston. Readback correct.  
07 13 00 09 CMP Ron, I've got one other flight plan question  
for you.  
07 13 00 11 CC Roger. Go.  
07 13 00 13 CMP Roger. In our checklist, there's a procedure  
called the GEC and/or IMU backup alignment, and  
it's identically the same procedure for either or  
both preferences. I noticed in the flight plan  
we've got two separate tests there which appar-  
ently are the same thing. I wonder if you could  
clarify that? There's one on 262 and one on 273.  
07 13 00 40 CC Roger. We'll investigate and advise.  
07 13 00 44 CMP Okay.  
07 13 00 46 CC And on your P23, we have good data. We will be  
assessing it tomorrow and let you know.

07 13 00 54 CMP You say you did get good data?

07 13 00 56 CC Affirmative.

07 13 00 57 CMP Well, fine.

07 13 02 19 CC Apollo 7, Houston. One minute LOS; Canaries at 23.

07 13 02 24 CMP Roger. Understand. Canaries at 23.

CANARY (REV 115)

07 13 24 16 CC Apollo 7, Houston through Canary. Standing by.

07 13 24 23 CMP Roger.

07 13 24 26 CC Roger. Loud and clear.

07 13 24 28 CMP Roger.

07 13 25 33 CC Apollo 7, Houston. Opposite omni.

07 13 25 37 CMP Roger.

07 13 31 39 CC Apollo 7, Houston. Thirty seconds to LOS; Honeysuckle at 11. That'll be at USB only.

07 13 31 47 CMP Okay. Eleven for Honeysuckle, and I'll turn it up.

07 13 32 01 CC 7, Houston. My mistake. Honeysuckle is not up this pass; it will be Redstone at 27.

07 13 32 07 CMP Okay. Redstone, 27. Look for you then.

07 13 32 13 CC Roger. We're going to be in a quandry in the morning. You're supposed to pass right over Houston at the same time you're shooting down the TV pictures, so we'll probably look at the TV instead of look for the spacecraft.

07 13 32 24 CMP ... get a portable you could watch it outside.

07 13 32 33 CC Roger.

## REDSTONE (REV 115)

07 14 28 15 CC Apollo 7, Houston through Redstone.

07 14 28 20 CMP Hello, there.

07 14 28 21 CC Hi, how are you this evening?

07 14 28 23 CMP Just fine, Bill. How are you?

07 14 28 25 CC Bright-eyed and bushy-tailed.

07 14 28 28 CMP Attaboy.

07 14 30 46 CC Apollo 7, Houston. I have a T zero time for your secondary coolant loop test.

07 14 30 57 CMP Say again, Bill, please.

07 14 30 59 CC I have the update time for the secondary coolant loop test.

07 14 31 04 CMP Okay. Start time for the test, you mean?

07 14 31 06 CC Roger.

07 14 31 08 CMP Okay. Go ahead.

07 14 31 09 CC It's 183 plus 40.

07 14 31 21 CMP Roger. 183 plus 40.

07 14 31 24 CC Right, and I've also been reminded to pass on - they said you probably already knew, but that duty cycle entries on the procedure are not appropriate; they're not applicable.

07 14 31 36 CMP Understand. The duty cycle entries are not appropriate.

07 14 31 39 CC Affirmative.

07 14 31 40 CMP Walt says he hopes somebody down there hawkeyes the radiator parameters on - keeping an eye on how they're doing.

0 07 14 31 48 CC Right.

07 14 32 04 CMP Houston, Apollo 7.

07 14 32 06 CC Go.

07 14 32 07 CMP Roger. We decided to start calling this thing the emergency coolant loop rather than secondary, so from now on, we'll use that term.

07 14 32 16 CC Right.

07 14 32 19 CMP That's really what it is.

07 14 32 20 CC Okay.

07 14 36 54 CC Apollo 7, Houston.

07 14 36 59 CMP Roger, Houston.

07 14 37 00 CC Say, Donn, I have a question about this glitch on the number 1 ball. We had a reading here that even with the ORDEAL power switch OFF, the switch must be in INERTIAL on the ORDEAL panel to present ORDEAL selection when you switch back to ball 1. Do you happen to know whether or not the switch was to INERTIAL on the ORDEAL box when you had the trouble?

07 14 37 34 CMP Bill, why don't you wait until Wally gets up after awhile, and you can discuss that. I wasn't awake when all that was going on, so I don't know what really happened.

07 14 37 40 CC Okay. Disregard.

07 14 37 43 CMP He's awake. I could relay it to him. I think it would be easier if you just talked to him later on.

0 07 14 37 46 CC Okay. That'll be fine.

07 14 38 20 CC Apollo 7, Houston. One minute LOS Redstone;  
Antigua at 47.

07 14 38 30 CMP Roger.

07 14 38 52 CMP Houston, our morning glass count is 06853.

07 14 38 58 CC Say again the number.

07 14 39 00 CMP 06853.

07 14 39 04 CC Roger.

ANTIGUA (REV 116)

07 14 48 26 CC Apollo 7, Houston through Antigua.

07 14 48 32 CMP Roger, Houston.

07 14 48 35 CC Right. And, Donn, I copied a number just about  
LOS, and you were just starting to go unreadable.  
I copied 06853, and what was the significance of  
that number?

07 14 48 47 CMP That was a radiation reading. Walt tells me we  
haven't been calling that down, so you can dis-  
regard it.

07 14 48 53 CC Okay.

07 14 55 42 CC Apollo 7, Houston. One minute LOS Antigua;  
Canary at 59, about 3 minutes.

07 14 55 51 CMP Roger.

CANARY (REV 116)

07 14 58 09 CC Apollo 7, Houston through Canary.

07 14 59 55 CC Apollo 7, Houston through Canary.

07 15 00 05 CMP Roger. Clear Lake CAP COMM, this is Apollo 7.

07 15 00 09 CC Roger.

07 15 06 11 CC Apollo 7, Houston. We will need S-band volume up for about a minute and a half longer contact over Madrid.

07 15 06 20 CMP Roger. That is the first contact over Madrid, isn't it, Bill?

07 15 06 24 CC I think we got one last night. In fact, we had a little trouble getting the handover executed.

07 15 06 32 LMP Roger, Bill. And good morning.

07 15 06 34 CC Good morning, sir. I was told I had better be real careful talking to you today.

07 15 06 45 LMP Say again, Bill. Say again.

07 15 06 48 CC Sorry, Walt. I thought that was Wally.

07 15 07 47 CC Apollo 7, Houston. How do you read?

07 15 07 50 LMP I read you loud and clear, Bill, but we've got an echo in the background.

07 15 07 54 CC Roger. I hear you five-by, also with an echo.

07 15 08 01 LMP Did you understand the message that Donn gave you when I flowed the secondary radiators, that I'd like to have somebody watching them pretty close?

07 15 08 08 CC Yes, they said they had every intention of doing that, and they understood what you said. They understood the intent.

07 15 08 15 LMP Okay.

07 15 08 23 CC And, Walt, we're coming up on LOS and - thought I'd just remind you that O<sub>2</sub> fuel cell purge.

07 15 08 31 LMP I haven't looked at the flight plan yet. Let me take a look here. 183 is in work now.

07 15 08 36 CC Roger. Thank you.

07 15 09 35 CC Apollo 7, Houston. Carnarvon at 36.  
CARNARVON (REV 116)

07 15 36 16 CC Apollo 7, Houston through Carnarvon.

07 15 36 23 LMP Roger, Bill.

07 15 36 28 CC Roger.

07 15 36 33 LMP Hey, Bill, we had the primary evaporator put on AUTO yesterday afternoon late in hopes that it would stroke sometime during the night and get reserviced. I can't verify it because I wasn't awake, but I don't believe it's operated all night long. We're on low power, and it's been almost 48 hours, so I'd like to find out about water - whether we ought to go ahead and manually run it for a few minutes before I do the secondary coolant loop.

07 15 36 58 CC Stand by.

07 15 39 26 CC Apollo 7, Houston. EECOM advises that the evaporator was reserviced less than 4 to 8 hours ago. But it's okay to recycle the back pressure valve by the normal procedure passed up earlier, but they recommend that you don't add water to it.

O 07 15 39 48 LMP We're not going to add water, and we're not going to recycle it. We're going to go ahead with secondary coolant loop operation now.

07 15 39 56 CC Walt, we're having a little keyhole trouble here. Would you say again, please?

07 15 40 00 LMP We're not going to add water to it, and I'm not going to reservice it at this time. I'm going ahead with the secondary coolant loop operation.

07 15 40 08 CC Roger. Understand.

07 15 41 33 CC Apollo 7, Houston. Opposite omni and 1 minute Carnarvon LOS; Honeysuckle at 43 and a half. Require S-band volume UP.

07 15 41 45 LMP Roger. Forty-three and a half. S-band volume up.

07 15 41 48 CC Roger.

07 15 42 10 CC Apollo 7, Houston. You can cease fuel cell purge on fuel cell 3 now.

07 15 42 19 LMP Roger. That completes all three of them?

07 15 42 21 CC Roger.

HONEYSUCKLE (REV 116)

07 15 44 37 CC Apollo 7, Houston through Honeysuckle.

07 15 47 41 CC Apollo 7, Houston. We're monitoring your secondary loop performance. It looks okay so far. We have about 4 and 1/2 minutes left, but there is a keyhole uncertainty.

07 15 47 53 CMP Roger. Say again, Bill. You just came in.

07 15 47 55 CC Roger. We're monitoring the secondary loop, and it looks good - -

07 15 48 00 CMP Roger. Understand.

07 15 48 05 LMP Looks good here, Bill.

07 15 49 18 LMP Hey, Bill, can you pick up a map update for us; and if you can't get it to us this station, will you give it to us over the next one?

07 15 49 24 CC Roger. I've got one waiting for you here if you're ready to copy.

07 15 49 38 CC Apollo 7, Houston. I have a map update when you're ready to copy.

07 15 49 43 CMP Go ahead.

07 15 49 44 CC For REV 116: 182 plus 47 plus 12, 74.2 west.  
For REV 117: time is 185 plus 48 plus 03, 120.5 west.

07 15 50 21 LMP Roger.

07 15 51 20 CC Apollo 7, Houston. One minute LOS Honeysuckle; Redstone at 04.

07 15 51 28 CDR Roger, Bill.  
REDSTONE (REV 117)

07 16 04 50 CC Apollo 7, Houston through Redstone.

07 16 04 54 LMP Roger. Loud and clear, Bill.

07 16 04 56 CC Thank you.

07 16 05 22 LMP Hey, Bill, verify for me on this secondary coolant test, that I have not bypassed the primary radiators. The pumps are off, but the radiators are not bypassed on the primary loop.

07 16 05 32 CC Stand by.

07 16 05 38 CC Roger. That's correct.

07 16 05 41 LMP Thank you. Secondary loop seems to be doing fine.

07 16 05 44 CC Right. We're watching it here, and it looks good.

07 16 06 08 CC Wally, I have a question on this glitch you got in the number 1 ball when switching - -

07 16 06 15 CDR It's not a glitch, Bill. It happened three times and stayed that way on the third time. I cannot transfer GEC's to number 1 ball.

07 16 06 26 CC Roger. One question that the ground would like to ask, and that is: what was the position of the inertial switch? Was the switch in INERTIAL on the audio panel?

07 16 06 41 CDR That's affirmative.

07 16 06 42 CC Roger. Thank you very much.

07 16 06 53 CDR Bill, you still read?

07 16 06 55 CC Roger.

07 16 06 56 CDR It transferred and then flipped 180 degrees in pitch.

07 16 07 01 CC 180 degrees in pitch.

07 16 07 03 CDR Roger. At first, I had it exactly right; then, it flipped right over. From then on, it kept flipping over.

07 16 07 10 CC Okay. I think that's significant.

07 17 07 13 CDR Roger.

07 16 07 14 CC The fact that it was okay to start with - -

07 16 07 16 CDR Yes, but not very long.

0 07 16 07 18 CC Okay.

07 16 07 29 CC Right. Wally, the statement I got here was that even with the ORDEAL power switch OFF, you had to have INERTIAL selected to prevent this glitch from occurring when you select ORDEAL.

07 16 07 46 CDR I'm well aware of that. Roger.

07 16 07 48 CC Roger. Okay.

07 16 08 21 CC Walt, let me know when you have a minute. I'd like to cover about three points on the BIOMED harness.

07 16 08 29 LMP Okay. They better not be very elaborate points. I've got two sensors now with the good leads apparently hooked into the blue transducer. Over.

0 07 16 08 40 CC Okay. That's the yellow one hooked into the blue transducer. Is that correct?

07 16 08 48 LMP Affirmative.

07 16 08 50 CC Okay. I'll pass on the recommendation. First point is, they would like to have tape wrapped around the leads starting with the yellow connector and wrapping the tape around the leads for about 2 inches down from the yellow connector to avoid a fatigue area there where the wires go into the little yellow housing or plastic covering.

07 16 09 20 CDR Bill?

07 16 09 21 CC Roger.

0 07 16 09 22 CDR Bill?

07 16 09 23 CC Go.

07 16 09 25 CDR I think we better refer back to the accident board from where I stand. I'll have no triggers in the suit loop, and we've gone much too far with this kluge right now. Now when Donn Eisele has a hot signal condition there, we've reached the bitter end. If we get suited up for reentry, we're gonna take them off.

07 16 09 49 CC Roger. Understand. Copied.

07 16 09 51 CDR Roger. I'm not yielding on that one.

07 16 09 58 LMP Bill, last night I replaced the upper sternal sensor with a new one that was low enough to reach the lead.

07 16 10 07 CC Good. That was the final point. They just wanted to make sure if it was possible to get the two sternal sensors located so that they didn't put tension on the leads.

07 16 10 21 LMP Right. I didn't think they wanted them right next to each other. I got it as low as I could, and they barely reach now. Looks like it will probably work.

07 16 10 29 CC Sounds good. Thank you very much.

07 16 10 31 CDR Bill, we've done all we can, I think, to make them work, and I'd rather not prevent a breakage because that's the thing that scares us.

0

O

Donn had one, and I had one; and one more, and we just may have trouble.

07 16 10 45 CC Roger. I think there's been a good effort in that respect. I don't think there's any question from the ground.

07 16 10 52 CDR Okay. Thank you.

07 16 13 18 CC Apollo 7, Houston. One minute LOS Redstone; MILA at 22. Secondary loop looks real good.

07 16 13 26 CDR Roger.

MILA (REV 117)

07 16 23 40 CC Apollo 7, Houston through MILA.

07 16 23 42 CDR Roger. Loud and clear.

07 16 23 47 CDR Bill, we've got a ... for the day.

07 16 23 52 CC You were garbled. Say again, please.

07 16 23 54 CDR We've got a problem for the day.

07 16 23 56 CC What's that?

07 16 23 58 CDR We are very worried about the ears. They are all blocked up with these colds. We're having a time to get one to clear, and we are seriously considering reentering shirt sleeve. I'm afraid that we can't quite clear our ears on the way down, but if we do have to clear them on the way down, we'll have to take the helmets off. And then they become a hazard bouncing around the cockpit.

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07 16 24 31 CDR We feel the risk of rupturing our ear drums is higher than the risk of injury without having our suits on. We realize the restraint harness won't fit us closely, and we are considering we can wear our life vest over our shirt-sleeve clothing.

07 16 24 49 CC Roger. I think we understand what you are saying there, and there has been considerable ground discussion regarding that.

07 16 24 57 CDR At this point in time, we feel the risk is lower to come in shirt sleeves than it is in the suits.

07 16 25 04 CC Roger. Understand. Copy.

ANTIGUA through BERMUDA (REV 117)

07 16 29 14 LMP Houston, Apollo 7. Over.

07 16 29 17 CC Apollo 7, Houston. Go.

07 16 29 19 LMP Roger. A 186 20 - I'm powering those items listed on the spacecraft 50-point configuration of the checklist, all except the - present plans are all except the CMC and the G&N, and will that bring us up to the proper power level for the next phase?

07 16 29 41 CC Roger. Stand by.

07 16 30 29 CC Apollo 7, Houston. Right. At 186 plus 40, you power up the SCS, and ground will command up some S-band equipment, but all that is necessary on board is for you to power up the SCS.

0 07 16 30 47 LMP Okay. On that same list, we have one cabin fan. We've been generally running without the cabin fans. Should I - do I have to - have to power that cabin fan up or not?

07 16 30 58 CC No. You can leave it OFF.

07 16 31 00 LMP I can leave the cabin fan OFF.

07 16 31 02 CC Right.

07 16 31 50 CC Apollo 7, Houston. That secondary coolant loop is looking very good.

07 16 31 55 LMP I concur.

07 16 32 25 CC Apollo 7, Houston. Coming up on LOS; Canary at 35.

07 16 35 40 CDR Houston, Apollo 7.

07 16 35 41 CC Go.

07 16 35 43 CDR Roger. Bill, did we give you a report on our MDC mission timer - a small crack in it a few days ago?

07 16 35 51 CC Roger.

07 16 35 52 CDR We have a second crack that developed after burn 5, and it is extending a little bit. It cuts from across left to right above the number 1 in one hundred's hours, and it cuts into tens of hours. We're reporting these so that they are logged prior to landing.

07 16 36 19 CC Roger.

07 16 36 22 CDR So there are two cracks now in that piece of glass.

07 16 36 24 CC Understand. Two cracks.

07 16 36 27 CDR Roger. And the second one was positively developed in flight - I can't really say about the first one.

07 16 36 34 CC But this one you noticed right after burn 5?

07 16 36 37 CDR That's correct.

07 16 36 39 CC Thank you.

07 16 40 37 CC Apollo 7, Houston. We'll need the USB volume up at 42 for contact through Madrid.

07 16 40 44 CDR Roger. - two?

07 16 41 14 CDR Roger. Apollo 7.

07 16 41 15 CC Go.

07 16 41 17 CDR Roger. This is a crying shame we don't have any film. We're getting some fantastic passes today.

07 16 41 23 CC Good.

07 16 41 26 CDR We got cut back too far on that film, I'm afraid.

07 16 41 36 CC Apollo 7, sorta faded out there. We'll call you on S-band here in about 30 seconds.

07 16 41 43 CDR Good.

MADRID (REV 117)

07 16 43 09 CC Apollo 7, Houston on S-band through Madrid. How do you read?

07 16 43 14 CDR Roger. Loud and clear with a slight echo.

07 16 43 17 CC Roger. One minute until LOS; Carnarvon at 10.

07 16 43 23 CDR Roger. Carnarvon at 10.

07 16 44 00 LMP Hey, Bill, log LMP 15 clicks of water, will you, please?

0 07 16 44 04 CC Roger. 15. Thank you.  
CARNARVON (REV 117)

07 17 09 51 CC Apollo 7, Houston through Carnarvon. Standing by.

07 17 12 19 CC Apollo 7, Houston through Carnarvon. Standing by.

07 17 12 23 CDR Roger.

07 17 13 34 CDR We have Carnarvon in sight in Sharp's Bay; we'll see if we can get another moment of the pass.

07 17 13 39 CC Roger.

07 17 14 36 CDR Carnarvon loud and clear.

07 17 14 39 CC Right.

07 17 14 40 CDR As always.

07 17 14 43 LMP Tell them down there, Bill, we're right over them - 240 miles.

0 07 17 14 46 CC Right.

07 17 14 49 CDR I think they know where we are better than we do.

07 17 14 52 LMP It's not true. Well, I'm right here.

07 17 14 59 CDR Lewis, we're looking down at you.

07 17 17 55 CC Apollo 7, Houston. Opposite omni, and S-band up at 19.

07 17 18 13 CMP Hey, Bill, we apologize for having you work over the weekend.

07 17 18 24 CC You're too kind.  
HONEYSUCKLE (REV 117)

07 17 25 12 CC Apollo 7, Houston. We have about 3 and 1/2 minutes to LOS, but we do have a keyhole problem.  
Texas at 53.

0 07 17 25 21 CDR Texas 53. Roger.  
07 17 25 27 CDR Roger, Webster CAP COMM.  
07 17 25 33 CC I've moved.  
TEXAS through ANTIGUA (REV 118)  
07 17 53 14 CC Apollo 7, Houston through Texas.  
07 17 53 17 CDR Loud and clear.  
07 17 54 29 LMP Nassau Bay CAP COMM, this is Apollo 7. Over.  
07 17 54 32 CC Roger. Go.  
07 17 54 35 LMP Roger. On the secondary coolant loop test, I'm logging fuel cell curves at three different times. I logged them when we started the test. What are the other times of the loop to be logged?  
07 17 54 48 CC Would you say again the last part there, Walt? I didn't quite understand.  
07 17 54 53 LMP On the secondary coolant loop DTO, I logged the fuel cell curves when we started the test. What are the other two blanks for what times? One's when you've got the high power on, I would imagine, but I don't know what the third one's for.  
07 17 55 08 CC Stand by.  
07 17 55 15 CDR Timber Cove CAP COMM, do you have any word on the GDC problem on ball 1?  
07 17 55 19 CC Negative.  
07 17 55 40 CC Walt, we're checking on those times.  
07 17 55 46 LMP Roger, La Porte CAP COMM.  
07 17 55 57 CC I feel like I'm gonna be had.

07 17 57 01 CDR No. That's Friendswood.

07 17 57 59 CC Apollo 7, Houston. In reference to the logging of fuel cell currents opposite selected times, you can disregard. That was only in case we couldn't get readouts, and we are getting good readouts.

07 17 58 15 LMP Roger. Thank you.

07 17 58 20 CC Roger. We're getting it on the DSE, and it's running. Also, in relation to the FDAI 1, apparently, the troops thought they had it figured out here, but it had to do with the switch not being in INERTIAL, and when you said it was, it sort of threw them back to the drawing board, and they're still looking at it.

07 17 58 41 CDR Yes, I went through that caper long ago in the simulator. Thank you, Dickinson.

07 18 00 32 CC Apollo 7, Houston. You're GO for 135 dash one.

08 18 00 38 LMP Roger. Thank you, Dickinson Center.

07 18 07 26 CC Apollo 7, Houston. One minute LOS; we'll have Canary at 11, and we will have an S-band backup voice check.

CANARY (REV 118)

07 18 11 56 CC Apollo 7, Houston through Canary.

07 18 12 04 LMP Roger, League City CAP COMM.

07 18 13 09 CC Apollo 7, Houston. For a check on our backup S-band, request up telemetry data switch to UP VOICE BACKUP and S-band volume increase.

O

07 18 13 33 LMP Houston, Apollo 7. I'm in UP VOICE BACKUP.  
07 18 13 42 CC Okay.  
07 18 14 02 LMP Houston, Apollo 7.  
07 18 14 05 CC Apollo 7, Houston. Go.  
07 18 14 07 LMP I'm in UP VOICE BACKUP. Have you called me?  
07 18 14 12 CC Right. Apollo 7, Houston. Do you read?  
07 18 14 16 LMP Houston, Apollo 7. I'm reading you five-by.  
07 18 14 20 CC Roger. We'll stay on this for a minute and see how it checks out.  
  
07 18 14 26 LMP Then I'm UP VOICE BACKUP?  
07 18 14 29 CC Affirmative.  
07 18 14 32 LMP Very, very clear.  
07 18 14 33 CC Good.  
O 07 18 14 34 CDR Bill, are we - are we going over the Canary Islands now?  
  
07 18 14 37 CC Affirmative.  
07 18 14 38 CDR Roger. Have them in sight.  
07 18 15 46 CC Apollo 7, Houston. Three minutes until LOS.  
07 18 15 53 LMP It seems to be cutting in and out.  
07 18 15 55 CC Okay. I'll give you a short count. One, two, three, four, five, five, four, three, two, one. Short count out.  
  
07 18 16 08 LMP Roger. Read you five-by-five.  
07 18 16 10 CC Good.  
07 18 16 16 CC Apollo 7, Houston. You can put up telemetry data switch back to DATA.

( )

0 07 18 16 22 LMP Roger.

07 18 17 10 CC Apollo 7, Houston. Back on VHF.

07 18 17 19 CC Apollo 7, Houston. Back on VHF.

07 18 17 23 CDR Loud and clear.

07 18 17 26 CC Roger. About a minute and a half Canary LOS;  
Carnarvon at 45.

07 18 17 32 CDR Roger.

07 18 17 46 CC And, Apollo 7, we'd like to confirm up telemetry  
data switch to DATA.

07 18 17 52 LMP Telemetry data switch to DATA.

07 18 17 54 CC Roger.  
CARNARVON (REV 118)

07 18 45 39 CC Apollo 7, Houston through Carnarvon. Standing  
by.

07 18 45 55 CDR Loud and clear.

07 18 45 57 CC Roger.

07 18 46 15 LMP Houston, Apollo 7.

07 18 46 16 CC Go.

07 18 46 18 LMP Would you run through the SPS power-up checklist  
and tell me if our loading right now is adequate  
for this part of the test?

07 18 46 26 CC Stand by.

07 18 46 38 CC Apollo 7, Houston. We'll be right back with  
you; we're checking it out.

07 18 46 42 LMP Thank you.

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0 07 18 48 48 CC Apollo 7, Houston. Opposite omni; also, your load now is from 350 to 400 watts, which is the required delta. We have powered up the S-band power amplifier and the FM transmitter.

07 18 49 04 LMP Roger.

07 18 51 07 LMP Houston, Apollo 7.

07 18 51 09 CC Apollo 7, Houston. Go.

07 18 51 11 LMP Roger. Magazine R, Frame 33, Shark's Bay and Carnarvon station; Frame 34 is a town just south of there.

07 18 51 29 CC What was the subject for Frame 33?

07 18 51 32 LMP Frame 33 is Shark's Bay and Carnarvon; Frame 34 is a town about 60 miles south of there.

07 18 51 39 CC Thank you.

07 18 53 52 CC Apollo 7. Do you have a GDC on FDAI 1?

07 18 54 03 CDR Negative.

07 18 54 04 CC Thank you.

07 18 54 07 CDR That's just the IMU wheeling around.

07 18 54 11 CC Roger.

07 18 54 47 CC Apollo 7, Houston. Coming up on LOS Carnarvon. You can turn the S-band volume up in 1 minute.

07 18 54 57 LMP Roger.  
HONEYSUCKLE (REV 118)

07 18 57 24 CC Apollo 7, Houston.

07 18 57 28 LMP Roger.

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07 18 57 29      CC      I have a couple of questions. First, I'd like to know if you did a COAS calibration back on the second day during the rendezvous?

07 18 57 42      CDR      Negative.

07 18 57 43      CC      Roger. And second - -

07 18 57 45      CDR      Wait a minute. Donn did one before the rendezvous.

07 18 57 49      CC      Okay. Fine. That's good; thank you.

07 18 57 51      CDR      Do you want the numbers on that, or did you lose them?

07 18 57 55      CC      Stand - I'll wait until they ask you for them here. Apparently, they just want you to know if you've done it. Second point, have you done a P53 and a P54 using the COAS?

07 18 58 07      CDR      Negative.

07 18 58 09      CC      Thank you.

07 18 58 10      CDR      We probably almost had to.

07 18 58 44      CDR      Do you read?

07 18 58 46      CC      Apollo 7, Houston.

07 18 58 48      CDR      On the COAS alignment, the target is to the right 1 degree and up 1 degree.

07 18 58 58      CC      Right 1 degree and up 1 degree.

07 18 59 01      CDR      That's right 1 degree and up 1 degree. Basically, that means there's a space across left 1 degree and down 1 degree to be aligned.

07 18 59 10      CC      Roger.

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07 18 59 12 CDR In front of the target.

07 18 59 13 CC Roger.

07 18 59 16 CDR In other words, the target shows up in the northeast quadrant.

07 18 59 20 CC Target shows up in the northeast quadrant. Right.

07 18 59 23 CDR Okay.

07 19 00 07 CDR El Lago CAP COMM.

07 19 00 10 CC Say again.

07 19 00 12 CDR El Lago CAP COMM.

07 19 00 13 CC Roger. Go.

07 19 00 14 CDR Roger. On power up, we had 0.8 degrees per second in yaw to the right, zero in roll, and zero in pitch.

07 19 00 24 CC Roger. 0.8 degrees per second yaw right, zero roll, zero pitch.

07 19 00 30 CDR That's correct.

07 19 00 32 CC Also, we have been monitoring the power load here. The delta is about 300 watts. We would like to bring up inverter 3 to main A, but don't put on either bus. This will give you an additional 100 watts.

07 19 00 52 LMP Roger. You want to run that inverter without load, then, for the next 4 and 1/2 hours?

07 19 00 59 CC That's affirmative.

07 19 01 14 LMP How about - what if we powered up the G&N?

07 19 01 17 CC Stand by.

O

07 19 01 24 CC The G&N isn't cool with the secondary loop.  
07 19 01 27 CDR That's a good point.  
07 19 01 38 LMP Inverter 3 going on main A.  
07 19 01 41 CC Roger.  
07 19 02 49 CC Apollo 7, Houston. One minute LOS Honeysuckle;  
Huntsville low elevation pass at 21; Guaymas at  
25.

07 19 03 01 CDR Roger.

## GUAYMAS through BERMUDA (REV 118)

07 19 25 28 CC Apollo 7, Houston through Guaymas.  
07 19 25 35 CDR Roger.  
07 19 25 50 CC Apollo 7, Houston. Like O<sub>2</sub> tank 2 fans ON 3 min-  
utes and then OFF.

O

07 19 25 57 CDR Roger, La Porte.  
07 19 26 51 CDR Houston, we have changed canister 16.  
07 19 26 58 CC Roger. Canister 16; thank you.  
07 19 27 00 CDR Roger. I'll be coming up on humidity check soon.  
07 19 27 05 CC Roger.  
07 19 27 27 CDR We haven't had much luck with this revised sleep  
schedule, Bill. It's been revised to fit the  
flight plan this way. We're all up and going at  
2:00 in the morning Cape time. You understand  
why, because we're trying to stack this stuff in  
for Sunday night - Monday night, excuse me.

07 19 28 05 CC Apollo 7, Houston. Understand that last trans-  
mission had to do - something about a sleep cycle.

O

We're still a bit low; COMM is not too good right now.

07 19 28 14 CDR Roger. We're not having much luck with our sleep.

07 19 28 17 CC Roger. Understand that.

07 19 28 31 CC Apollo 7, Houston. Opposite omni.

07 19 28 35 CDR Roger. I think we'll still have a good show for you tonight though, Bill.

07 19 28 42 CC Roger.

07 19 28 48 CDR We have just finished rehearsing.

07 19 29 07 CDR Houston, do you still read?

07 19 29 09 CC Roger, Apollo 7. Go.

07 19 29 11 CDR Okay. Are you going to pass on our comments about a probable - I would like to put it that way - shirt-sleeve reentry?

07 19 29 18 CC Roger. I have already passed that on.

07 19 29 20 CDR Okay. I guess we'll talk about that the next watch or something. Is that right?

07 19 29 24 CC Roger.

GUAYMAS through BERMUDA (REV 119)

07 19 29 31 CC Yes. We've been talking about that for a couple of days in fact.

07 19 29 34 CDR Yes, and I just got a real kleenex full.

07 19 29 47 CDR How did that consultant's idea come out?

07 19 29 56 CC Say again.

07 19 29 57 CDR The consultant who said if we hadn't flown we probably would have gotten colds anyway.

07 19 30 02 CC Oh, I don't know.

07 19 30 08 CF ...

07 19 30 12 CC I don't know about that.

07 19 30 15 CDR Yes. Okay, Bill.

07 19 30 21 CC The gold team hasn't got to read any newspapers.  
We're all working.

07 19 30 26 CDR Ho, ho, ho!

07 19 30 33 CMP Are you going to rush home and watch the television show this morning, Bill?

07 19 30 37 CC No, I'm going to watch it from here this morning.

07 19 30 40 CDR You are going to sleep in, huh?

07 19 30 43 CMP Is that show carried live every morning?

07 19 30 45 CC Right. It is, and we're - this shift goes through the television sequence this morning.

07 19 30 53 CDR You're really in there, huh?

07 19 30 55 CC Oh, boy.

07 19 30 56 CDR You're getting all the big ones: burn 5, television.

07 19 31 01 LMP How does that picture turn out over the commercial screen by the time it gets there?

07 19 31 05 CC It's pretty good. In fact, I was very surprised the first time I saw it. I was ready for something like what we saw out at integrated, and it turned out it was not difficult at all to recognize you, and I was really impressed with the quality.

0 07 19 31 22 CDR I gather the recommendation is to move rather slowly.

07 19 31 25 CC Roger. Fast panning - of course, you get - sort of "burn in" on that vidicon, I guess. And if you move very slowly, it stays fairly sharp; and, of course, the steadier you hold the camera, the sharper the images.

07 19 31 40 CDR Very good.

07 19 31 45 CMP Say, Bill, this is Donn. I called up several hours ago regarding some DTO's, and I wondered if you could run it by again to see if we could gin up an answer.

07 19 31 55 CC Was this the one regarding the backup alignment?

07 19 31 58 CMP That's right.

07 19 32 00 CC Roger. The reading I have on that is they would still like to do both of them. The first one gives you a check on your GDC and IMU both. You align the GDC, and then you drag it over to an attitude; and then you align the IMU, and when you do the star check at that point, you get a gross additive error from the time at which you started the process. The second DTO involves a GDC alignment to a known IMU, and this gives you a good handle on the error in the GDC alignment itself, and this, they think, is going to give them information in properly evaluating the total error on the GDC and IMU alignment.

07 19 32 55 CMP I can see the rest now, but I think it's getting awfully pure.

07 19 32 59 CDR Yes. Anytime we have to use the line, we can try GDC align to it.

07 19 33 04 CDR Isn't that right?

07 19 33 06 CC That's affirmative.

07 19 33 28 CDR Bill, what planet is that right next to the moon?

07 19 33 29 CC Stand by.

07 19 33 30 CDR We are looking at it right now; you ought to walk outside.

07 19 33 43 CDR We are guessing Venus.

07 19 34 04 CC I have a further - they are checking on that planet, by the way. I have further information on this DTO. They are looking right now at replacing the backup IMU alignment with a P53 - P54 COAS.

07 19 34 20 CDR That sounds more exciting.

07 19 34 22 CMP That sounds a little more sensible to me.

07 19 34 26 CC Okay.

07 19 34 28 CDR I thought you were building up to that with that COAS check and all that good stuff.

07 19 34 45 CC The planet is Jupiter.

07 19 34 48 CDR Jupiter? Oh.

07 19 34 49 CC By jove.

07 19 34 50 CDR It's a real pretty sight; we got the sunrise, "yewpiter", and then the moon, all within about 8 degrees of each other.

0 07 19 35 02 CDR Negative. About 20 degrees. I can still see the moon, but Jupiter is out of sight, and the sun is up.

07 19 35 15 CDR And they sparkle plenty.

07 19 35 18 CC Right.

07 19 35 38 CC Apollo 7, Houston. The secondary coolant loop is still performing excellently.

07 19 35 43 CDR Okay.

07 19 38 50 CC Apollo 7, Houston.

07 19 38 53 CDR Go ahead.

07 19 38 54 CC Roger. If Donn is ready to copy, I have this change in relation to this DTO.

07 19 39 01 CDR Roger. We're just doing a humidity check.

07 19 39 05 CC Okay. I'll stand by.

07 19 39 07 CDR Go ahead. I can write it on the flight plan.

07 19 39 09 CC Okay. At 191 plus 40 in the flight plan, you can delete the reference in the MCC update box there regarding a backup IMU alignment and replace it with T align time for P54. Just T align for P54.

07 19 39 40 CDR Okay.

07 19 39 48 CC And at 193 hours, delete IMU backup align and reference to sextant star check at 193 plus 30; don't need to write that down, I don't think - with P53 - P54 IMU backup align with COAS.

07 19 40 27 CDR Roger.

0

0 07 19 40 35 CC And this is merely a note: recommended P52 option 3 at the station of sequence as a check; power down at completion of sequence. The approximate RCS consumption will be 3 to 4 pounds.

07 19 40 57 CDR That's a nice prediction. Okay.

07 19 40 59 CC And that's it.

07 19 42 18 CC Apollo 7, Houston. One minute LOS Bermuda; Canary at 47.

07 19 42 24 CDR Roger.  
CANARY (REV 119)

07 19 47 55 CC Apollo 7, Houston through Canary.

07 19 49 03 CC Apollo 7, Houston.

07 19 49 09 LMP Go.

⊖ 07 19 49 11 CC Roger. Walt, I'd like to go over this relay COMM mode test.

07 19 49 20 LMP Roger. Bill, we've already done that once, and we'll just configure it the same way we did then, right?

07 19 49 26 CC Well, this is for USB up and VHF down.

07 19 49 32 LMP Right. It's the same switch configuration for either one. Any exception to the exceptions?

07 19 49 53 CC Apollo 7, Houston. Walt, they say the test didn't work last time, and EECOM would like for me to go ahead and go through this check the way they have written it to see - to make sure they have covered all their bets here.

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0 07 19 50 10 CDR Bill, is it any different on their slide rule?

07 19 50 15 CC Apollo 7, Houston. Opposite omni.

07 19 50 20 LMP I can plot for you with our slide rule, and pass up the differences, will you?

07 19 50 26 CC Roger. Okay. You configure the center audio panel per side 2 the COMM slide rule relay mode; and, in addition to that, do the following: on the center audio panel, the CMP's VOX sensitivity thumb wheel to 06.

07 19 50 52 LMP VOX sensitivity to 06.

07 19 50 54 CC S-band normal voice relay.

07 19 51 02 LMP Roger.

07 19 51 03 CC VHF AMA Duplex, VHF AMB OFF, and squelch B setting to 05.

07 19 51 17 LMP Okay. The only thing you added to the normal procedure is the squelch B setting to 5; and I think there's a VOX mode higher than that last one, isn't there?

07 19 51 33 CC Walt, we don't know what they had last time, but we'd like for you to have it set up this way before Carnarvon acquisition, and that will be at 188 plus 21, and we'll try to contact you on this mode for Carnarvon. We have a very brief pass by Tananarive at 06.

07 19 51 58 LMP Understand. Wilco.

07 19 53 00 CC Apollo 7, Houston. One minute LOS Canary; Tananarive at 06.

0 07 19 53 08 LMP Roger.  
TANANARIVE (REV 119)

07 20 08 38 CC Apollo 7, Houston through Tananarive.

07 20 08 44 CDR Roger. Houston, Apollo 7.

07 20 08 46 CC Roger.

07 20 09 20 LMP Would you get us a map update and a right ascension for the star chart, please?

07 20 09 25 CC Roger. Will.

07 20 09 46 CC REV 121, 192 plus - stand by; disregard that one. For REV 121, it's 191 plus 49 plus 39, nodal crossing at 147.0 east; right ascension for star chart update is 02 33.

⊖ 07 20 10 23 LMP Roger. Understand. The right ascension is 2 hours and 33 minutes, right?

07 20 10 28 CC Affirmative. And for one - did you just want a star chart update?

07 20 10 34 LMP No, I wanted both.

07 20 10 37 CC Roger. Then for -

07 20 10 54 CC Walt, when you said you wanted that for two revs ahead, did you mean to go to the second rev beyond, like one, two, one?

07 20 11 05 LMP Forget that, Bill.

07 20 11 06 CC Okay.

07 20 11 08 CMP I don't think it matters that much, Bill.

07 20 11 10 CC Okay, Donn.

○

## CARNARVON (REV 119)

07 20 22 08 CC Apollo 7, Houston through Carnarvon.

07 20 22 15 LMP Roger, Houston.

07 20 22 17 CC Roger. Standing by.

07 20 22 20 LMP Roger. Do you want to go to this relay mode now?

07 20 22 24 CC Stand by.

07 20 22 32 CC Roger. We are ready to do the test.

07 20 22 35 LMP Okay. I'll configure the switches then.

07 20 22 37 CC Okay. Thank you.

07 20 23 35 CC Apollo 7, Houston. How do you read? Over.

07 20 23 49 CC Apollo 7, Houston. Relay mode; how do you read?  
Over.

07 20 24 28 CC Apollo 7, Houston. I am relay mode; how do you  
read? Over.

07 20 25 11 CC Apollo 7, Houston. How do you read?

07 20 25 32 CC Apollo 7, Houston.

07 20 25 35 LMP Roger, Bill. How do you read?

07 20 25 37 CC Roger. I read you five-square. The test was  
satisfactory.

07 20 25 41 LMP Okay. Thank you. Do you want us to go back to  
Simplex A?

07 20 25 50 CC Roger. Let's go back to the original configura-  
tion.

07 20 25 54 LMP ...

07 20 26 55 CC Apollo 7, Houston. Did you have your S-band  
volume up during that test?

07 20 27 04 LMP My S-band volume was not; I was reading you, however.

07 20 27 07 CC Roger. Thank you.

07 20 29 07 CC Apollo 7, Houston.

07 20 29 08 LMP Go, Houston.

07 20 29 10 CC I have been asked to pass on some helpful household hints here on TV improvement.

07 20 29 19 CDR Go ahead.

07 20 29 20 LMP Go ahead.

07 20 29 21 CC (Laughter) You sound pretty eager there. Right. One of the things they have mentioned is to remove the lens and blow the dust off the vidicon tube; second, clean the lens; third, the best quality is obtained with a fixed mount; fourth, they would like for you to try for some window views over Texas.

07 20 29 50 LMP I thought that the spacecraft motion over the ground precluded getting any good window views.

07 20 29 57 CC I concur; I saw your attempts. I saw one good shot of the Florida coast, however, but I was just passing on this information.

07 20 30 09 CDR Okay. We won't be in active hold today, and we'll plan it tomorrow.

07 20 30 14 CC Okay.

07 20 30 15 CDR If we are drifting, it's almost impossible.

07 20 30 17 CC Roger. Understand.

07 20 30 18 CDR Okay.

07 20 30 20 CC Hey, Wally, this is Jack.

07 20 30 23 CDR Good morning.

07 20 30 24 CC Good morning. If you take any pictures of the ground, the camera has to be very, very still.

07 20 30 31 CDR Understand. Think you will come in for the TV production?

07 20 30 36 CC No, I was just watching.

07 20 30 39 CDR Okay.

07 20 30 41 LMP We'll follow the rest of the hints from Heloise.

07 20 31 03 CMP There must be a great demand for this sort of thing, to get all these hints.

07 20 31 09 CC You just don't know how much of a demand there is.

07 20 31 19 LMP We haven't decided yet whether our category is a preplanned series or a special.

07 20 31 45 CDR Jack, by the way, who's doing the interiors for the ... now?

07 21 31 55 CC We missed that, Wally.

07 20 31 57 CDR Like Peter Hackett does on NBC, who does the interiors ...

HONEYSUCKLE (REV 119)

07 20 32 12 CC Apollo 7, Houston. S-band volume up, please.

07 20 32 16 CDR We'll check the VHF channel not clear.

07 20 32 23 CC Yes, we got some interference there, also.

07 20 32 25 CDR We got a bunch.

07 20 32 31 CDR Did you follow my last question?

07 20 32 33 CC No, I didn't, Wally.

07 20 32 35 CDR Typically, they show the interior of a spacecraft; they got a mockup. Who is the announcer for the mockups?

07 20 32 47 CC I haven't seen any of the commercial television myself. The only television I've seen is when it comes over our monitor here; and we're getting it live, and it's going out live through the networks.

07 20 33 00 CDR Roger.

07 20 33 50 CC Apollo 7, Houston. We would like O<sub>2</sub> tank 2 fans back OFF.

07 20 33 55 CDR Okay.

07 20 34 00 CDR They're OFF.

07 20 34 01 CC Thank you.

07 20 34 38 CDR When you ask for 3 minutes, you really get them.

07 20 34 40 CC Roger. Stir them up good.

07 20 34 44 CDR Roger.

07 20 34 47 CDR Should we get out and start all over again? Good morning.

07 20 35 23 CDR Houston, are you deleting the hydrogen fuel cell purges?

07 20 35 27 CC Yes, all of them are deleted.

07 20 35 29 CDR Roger.

07 20 35 32 CC We will schedule them when we need them.

07 20 35 37 CDR Roger.

0 07 20 37 46 CC Apollo 7, Houston. Coming up on AOS Hawaii at 50.  
HAWAII (REV 119)

07 20 50 53 CC Apollo 7, Houston through Hawaii.

07 20 52 13 CC Apollo 7, Houston through Hawaii.

07 20 52 28 LMP Houston, Apollo 7. You read? Over.

07 20 52 30 CC Roger. Apollo 7, Houston. How do you read?

07 20 52 33 LMP Fine. I heard your first call, Bill.

07 20 52 35 CC Okay.

07 20 53 32 LMP ... the narrative, too?

07 20 52 38 CC Say again, Apollo 7.

07 20 53 41 LMP Roger. When they go live with this television,  
do they carry the narrative, too?

07 20 53 45 CC Affirmative.

07 20 55 04 CC Apollo 7, Houston. Give me a short count, please.

07 20 55 10 CDR Short count: one, two, three, four, five, five,  
four, three, two, one. Over.

07 20 55 14 CC Roger. Read you five-square with a little scratch.

07 20 55 19 CDR That was an itch.

07 20 55 27 CDR If you could see the beards we have, you would  
sympathize.

07 20 55 29 CC Roger. We aren't reading your VHF. We're pick-  
ing you up on S-band.

07 20 55 35 CDR Roger.

07 20 55 39 CC You might check S-band NORMAL voice-to-voice and  
VHF AMA to SIMPLEX.

07 20 55 44 LMP Roger. I confirm those switch positions.

0 07 20 55 47 CC Roger.

07 20 55 55 CC Apollo 7, Houston. Opposite omni.

07 20 57 09 CC Apollo 7, Houston. How do you read now?

HUNTSVILLE (REV 119)

07 20 58 20 CC Apollo 7, Houston through Huntsville. How do you read?

07 20 58 26 LMP Fine, Bill. Well, a little weak now. How about you?

07 20 58 30 CC I'm reading you about three-by-three.

07 20 58 34 LMP Roger. Look, we'll turn the camera at 02, and we would like to hear a call from you when you are receiving the picture so we can get the show rolling.

07 20 58 44 CC Roger. Understand. I'm ready any time you are, Sea Bee.

07 20 58 57 CDR ... into millions.

07 20 59 49 LMP Hey, Bill. Do you read?

07 20 59 51 CC Roger. Go.

07 20 59 53 LMP Roger. I show that the tapes - okay, our tape is stopped here dumping. I'm going to go off the tape and turn the TV switch on the S-band AUX.

07 21 00 01 CC Roger.

07 21 00 37 CC Apollo 7, Houston. We'll command the tape switch from the ground.

07 21 00 43 LMP Roger. I've got selected now.

07 21 00 46 CC Roger.

0 07 21 02 28 CT Huntsville LOS.  
GUAYMAS through ANTIGUA (REV 119)

07 21 02 45 CDR This is Apollo 7. Do you read?

07 21 02 47 CC Roger. Go.

07 21 02 49 CDR Do you have a picture?

07 21 02 50 CC Negative. I'll give you a call as soon as we  
get one.

07 21 02 55 CDR Roger.

07 21 03 38 CC Apollo 7, Houston. We are starting to receive  
it now.

07 21 03 41 CDR Roger.

07 21 03 54 CC We can't quite tell the perspective here. Looks  
like we are looking down at one of the couches.

⊖ 07 21 03 58 CDR That is affirmative. Good morning, Houston; you  
are looking down the couches. The crew is out  
just now for a coffee break. I think you will  
find that without the crew here, there is abso-  
lutely nothing to fear - nothing to fear. This  
is a taped message.

07 21 04 16 CC Is this a fully automated flight?

07 21 04 18 IMP That's affirm. At this point, I would like to  
give you slow scan of the cockpit. The crew is  
out for a short break, so we will find them  
shortly, I'm sure. As we look across the couches,  
you will notice that we are coming through to the  
total instrument panel and then coming around the

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panel. You will note that we have a full amount of lighting in here, which helps us under all conditions.

07 21 04 43 CC That is an excellent picture right there.

07 21 04 45 CDR Roger. There is back lights in the panel as well as front lighting with floodlights. We are using floodlights now.

07 21 04 52 CC That is very good.

07 21 04 53 CDR Looking at the heart of the spacecraft - as far as reference goes, the so-called FDAI, the flight direction attitude indicator - you are viewing now the various attitudes, and that system is not operating. We are in drifting flight. We will start with our entry monitor system, which we will use Monday evening - actually Tuesday morning - to return. The myriad of switches you see here are for controlling the various attitude thrusters and for monitoring the launch boosters. I'll pass it on to another unseen hand, and you can view on his panel some of the results.

GUAYMAS through ANTIGUA (REV 120)

07 21 05 46 CMP On this portion of the panel, you see the DSKY, that is, the display keyboard for our onboard computer. We use the computer for various calculations for earth orbit, navigation, and for aligning the inertial platform. Oh, I see someone is coming in now.

O

07 21 06 14

CMP

Good morning, Captain. Up above the display keyboard is another instrument identical to the one that Wally just described. The reason we have two is that if one fails, we will have a backup. Also, we have two completely separate attitude reference systems; we can have one displayed on one ball, and the other on this one in front of you. Now, I will pass the camera on down to the next unseen hand.

07 21 06 48

LMP

Roger. Good morning to everyone in television land. You are looking at the right-hand portion of the main display console. The upper left-hand portion of your view, you will see the instrument that has to do with the cryogenics that are used to power the fuel cells and provide breathing oxygen in the spacecraft. Just beneath those, the round dials are devoted exclusively to environmental control system monitor functions; and immediately below those, the switches which control the environmental control system. Moving on slightly over to the right, we have several meters which monitor the service propulsion system which were used during the burns we made the other day. I see we have another crewman coming in from his coffee break here, and here he comes, ladies and gentlemen. Lo and behold, it is our navigator; he found himself.

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Continuing here just briefly, we have a large number of switches at the bottom of this panel which have to do solely with communications.

One of those switches you might be able to read - it is labeled TV and by turning that switch on, we started to send this picture to you.

07 21 08 21       CMP       This instrument here is the quantity meter for our main propulsion system. It reads out to - percentage quantity remaining. And here comes a third member of our party, arriving.

07 21 08 44       CMP       Old Smoothie himself.

07 21 09 02       CDR       It is known in the parlance of spacecraft talk that we have a crew commander. What is not known too well by many is that we run a taut ship here, and to maintain physical discipline as well as moral discipline, we carry on a local, orderly drill instruction period. At this time, gentlemen, left face. About face - about - about face; crewmen drift. As you can see, we have our lighter moments.

07 21 09 47       CC       Oh, that's bad.

07 21 10 01       CDR       As you can see, our spacecraft provides both lighter moments and moments of relaxation. We have one other motion that is called enforced march, which might be indicative of the control we have in the new mode, as we have titled it, intravehicular

activity or IVA. This is somewhat modernized over the older form of activity of EVA.

07 21 10 28 CDR Hup two. You may note from this that we have our ups and downs.

07 21 10 46 CMP We have got to get a new writer. Just a second, and we will dolly in camera 2 and see what the erstwhile drill sergeant is doing.

07 21 11 05 CMP And there we have him. You can see he has been working very hard. Wally has been drilling his troops.

07 21 11 10 CC Yes, there we are.

07 21 11 14 CMP Do you see the drill master here?

07 21 11 17 CC Right. We have a good picture again. We lost it for just a minute.

07 21 11 23 CMP Roger. We switched it off and dollied in camera number 2.

07 21 11 26 CC I see.

07 21 11 27 CMP That's all technical talk among us television people.

07 21 11 35 CDR You tell 'em ...

07 21 11 37 CC They want to know what kind of dollies you have?

07 21 11 40 CMP Not the right kind.

07 21 11 56 CDR We are going to try to get another lens up. We are - we're tempted to show you the outside. This is rather good weather. We will get a long telephoto lens on it. At this time, I will show

you the long equipment bay while Walt is digging out that lens. The weather is somewhat scattered. Quite a few large cloud formations overcast over the Gulf. I believe if you will bear with us, we will change lenses and get an outside view.

07 21 12 23 CC Good show, Wally. The picture is exceptionally good today.

07 21 12 27 CDR Roger. The camera is going OFF.

07 21 12 28 CC Right.

07 21 12 42 CDR Okay. We are going outside. Do you want ALC OUT or IN?

07 21 12 46 CC We want adjacent omni first. Stand by.

07 21 12 50 CDR Okay. We're outside. Camera's coming ON.

07 21 12 55 CC ALC out, please. We do not have a picture.

07 21 13 15 CC We still don't have a picture.

07 21 13 18 CDR ...

07 21 13 23 CC We must be right on the fringe of reception.

07 21 13 30 CC Try opposite omni, please.

07 21 13 54 CDR Roger. We're turning camera off.

07 21 13 55 CC Okay.

07 21 14 25 CC Apollo 7, Houston. Confirm you have turned the camera off.

07 21 14 29 CDR Yes.

07 21 14 30 CC Roger.

07 21 14 31 CDR Next time, we will have to get better material or better writers.

07 21 14 39 CC It's also suggested better actors.

07 21 14 44 CDR Our actors' equity demands more sleep next time.

07 21 14 47 CC Right.

07 21 14 49 CMP We would have thought of a better plot, but we didn't get enough sleep last night.

07 21 14 54 CC Okay. I get the point.

07 21 16 58 CC Apollo 7, Houston. The secondary loop still looks very good. About one and a half minutes LOS; Tananarive at 41.

07 21 17 09 LMP Roger. Bill, can you give us a readout on what our waste water quantity was at the start of this test, and what we're showing now?

07 21 17 18 CC Right now the waste water is 55.8 percent. Stand by for the previous reading.

07 21 17 26 LMP Roger. At 183 40.

07 21 17 33 CDR And, Bill, we welcome suggestions for tomorrow's bit.

07 21 17 37 CC Go.

07 21 17 38 CDR We need them.

07 21 17 42 CC I'm sorry you were cut out. Say again.

07 21 17 44 CDR We welcome suggestions for tomorrow's bit.

07 21 17 51 CC I'm sorry. I didn't get that, Wally.

07 21 17 52 CDR We welcome a new script for tomorrow.

07 21 17 56 CC Oh, I'm sorry. Okay. I guess you've got as many ideas as we do. That was actually very good today. That was the best I've seen the picture.

I thought the pictures of the instrument panel were very good.

07 21 18 09 CDR I'm talking about that other part. No acting awards today?

07 21 18 15 CC I'm afraid to say anything.

07 21 18 24 CMP Okay. If you're so smart, you come up here and do it.

07 21 18 27 CC Hey! I welcome the opportunity.

TANANARIVE (REV 120)

07 21 42 25 CC Apollo 7, Houston through Tananarive. Standing by.

07 21 49 06 CC Apollo 7, Houston. We're about LOS Tananarive. Do you want to turn up your S-band volume? We have an ARIA aircraft in about 3 minutes.

ARIA 2 (REV 120)

07 21 53 09 CT ARIA 2, go REMOTE.

07 21 53 55 CT ARIA 2 has AOS. ARIA 2 has AOS.

07 21 54 04 CC Apollo 7, Houston through ARIA.

07 21 54 48 CT ARIA 2 has two-way lock. ARIA 2 has two-way lock.

07 21 55 13 CC Apollo 7, Houston through ARIA.

07 21 56 24 CC Apollo 7, Houston through ARIA.

07 21 56 32 LMP Roger, Houston. You just -

07 21 56 35 CC Roger, Walt. You faded out, also. We'll just stand by here on ARIA and pick you up at Carnarvon in a few minutes.

07 21 56 44 LMP I've got a little dope on the pictures we've been taking with the 16mm. You can pass on to the ... I've labeled the reels as we take them - 1, 2, 3, 4, et cetera, we'd like to keep them together if they will.

CARNARVON (REV 120)

07 21 57 14 LMP Houston, Apollo 7.

07 21 57 16 CC Roger. Walt, I got your comments on the 16mm film. You've labeled the reels 1, 2, 3, 4?

07 21 57 23 LMP On to the end, some of the reels overlap, so we'd like to see them kept in that order.

07 21 57 30 CC Okay. Understand.

07 21 57 32 LMP And they shouldn't be released until we take a look at them.

07 21 57 35 CC Okay.

07 21 57 36 LMP This is the movies that we've taken onboard, and I assume you people are monitoring fuel cell 2 and giving its usual daily ditty, huh?

07 21 57 49 CC That is affirmative.

07 22 07 31 CC Apollo 7, one minute LOS Carnarvon; Hawaii at 24.

07 22 07 39 LMP Roger. Jack, and I'd like to log that the water gun has become very difficult to work. The trigger is slowly getting very, very hard to push - and retract, mostly.

07 22 07 52 CC Okay. Copy that.

0 07 22 08 01 LMP And you remember yesterday we mentioned the chlorine injector, how it had a scum in it?

07 22 08 05 CC Roger.

07 22 08 07 LMP It died out overnight, apparently, and it had the form of salts this morning. I guess it's the kind of water that maybe something didn't get in and gum up the works on this water pistol, too. It's lasted - it's done very well up until now, but it's sure getting hard to work.

07 22 08 25 CC Okay. Copy that, Walt.

07 22 08 31 LMP And log me 25 clicks of water, will you?

07 22 08 34 CC Okay.

HAWAII (REV 120)

⊖ 07 22 27 23 CC Apollo 7, Houston through Hawaii.

07 22 27 28 LMP Good morning, Jack.

07 22 27 38 LMP I'm planning to power back up the primary and shut down the secondary at 191 10.

07 22 27 44 CC Roger. Copy that, and I have the morning news for you here.

07 22 27 55 LMP Okay. Jack, go ahead with the news.

07 22 27 58 CC Okay. Hurricane Gladys is cutting across northern Florida, will probably head back out into the Atlantic. Seventy-two airliners were backed up on the runways at Kennedy yesterday morning when the fog finally lifted. And in the Post this morning, there is a picture of Jo and

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Harriet and Lo out in the early morning hours trying to spot your spacecraft as it went over. And there's been a big flap at the Olympics over a couple of black US athletes who made a racial protest while receiving their awards during the playing of the Star Spangled Banner. The Olympic Committee dismissed them. And Ohio State plays Northwestern today, and USC takes on Washington.

07 22 28 50 LMP We'll be standing by for the results.

07 22 28 52 CC Roger. We'll give them to you as soon as they come up.

07 22 32 52 LMP Hey, Jack, log the LMP with 25 clicks of water.

07 22 32 56 CC Roger. Another 25 clicks.

HUNTSVILLE (REV 120)

07 22 34 16 LMP Houston, Apollo 7. Over.

07 22 34 18 CC Go ahead, Apollo 7.

07 22 34 21 LMP Roger. Jack, log the LMP with 25 clicks of water, will you?

07 22 34 25 CC Roger. I copied that before.

07 22 34 28 LMP Okay. You might tell Virgil True, out at the Hawaii site, that we got a good picture of Hawaii a couple of days ago.

07 22 34 36 CC Okay. Will do.

07 22 34 42 CDR And Louis Wainwright has plenty of pictures of Carnarvon coming.

07 22 34 47 CC Copy that, Wally.

07 22 35 23 CDR Jack, when you have a minute; on those movies  
Walt was talking about - -

07 22 35 30 CC Wally, I missed that.

07 22 35 33 CDR Roger. On the movies we took on board -

07 22 35 39 CC Let's wait till we get - we're over the Hunts-  
ville - let's wait till we get through Guaymas  
here, and I think you'll be a little clearer.

07 22 35 48 CDR Very good.

GUAYMAS through ANTIGUA (REV 120)

07 22 36 44 CC Apollo 7, how do you read?

07 22 36 46 CDR Very good, Jack.

07 22 36 48 CC Okay. You are loud and clear now, Wally.

07 22 36 51 CDR The onboard movies.

07 22 36 54 CC Okay.

07 22 36 55 CDR Okay.

07 22 36 56 CC Okay. Copied about the onboard movies.

07 22 36 58 CDR Okay. I want tight clamps put on those until  
the crew gets to review them.

07 22 37 04 CC Roger. I have made a special note of that.

07 22 37 07 CDR Very good. I think you can get Pete to back you  
there. On the S0368, the outside pictures of  
the rendezvous and of the earth: that's fair  
game for release.

07 22 37 18 CC Okay. Copy that.

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07 22 37 20 CDR There may be embarrassing - but I don't want people bothering something they don't know anything about all the goodies we took inside.

07 22 37 31 CC I didn't get the last one, Wally.

07 22 37 34 CDR I'm trying to avoid our inside pictures being misunderstood.

07 22 37 38 CC Okay. Copy that.

07 22 37 40 CDR There's nothing embarrassing about them. I just want to do them right before they release them.

07 22 37 43 CC Okay.

07 22 37 45 CDR Very good.

07 22 38 49 CC Apollo 7, Houston.

07 22 38 58 CC Apollo 7, Houston. We are ready to perform the keying test now.

⊖

07 22 39 15 LMP Do you want ranging AUX ...

07 22 39 20 CC Apollo 7, Houston. We are ready for the keying test.

07 22 39 37 CC Apollo 7, Houston.

07 22 39 39 LMP ...

07 22 39 41 CC Okay. Walt, could you put your PMP power to AUX and your S-band normal PCM switch to KEY? Turn up your S-band volume, and we're ready for the keying test.

07 22 39 54 LMP All done, Jack. I'm ready to key.

07 22 39 56 CC Okay. Go ahead.

07 22 39 58 LMP - .... .. - - - - - . . . . .  
- - - - - . . . . . - - - - - . . . . .

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0 07 22 40 50 CC Okay. You got 100 percent today, and you can put your switches back to PCM and NORMAL.

07 22 41 40 CC Apollo 7, Houston.

07 22 41 43 LMP Loud and clear.

07 22 41 44 CC Five-by. You might want to know how well the TV was received this morning. On all three networks, you replaced all the kiddie cartoons.

07 22 41 57 CDR (Laughter) This is your Uncle Don.

07 22 42 05 CDR As I recall, kiddie cartoons are on all three networks, though.

07 22 42 08 CC That's right; you replaced all three - all the kiddie cartoons on all three networks.

07 22 42 14 CDR That's pretty strong.

⊖ GUAYMAS through ANTIGUA (REV 121)

07 22 45 08 LMP Frame 38, magazine R, is Dallas and frame 39 is the Mississippi River looking north.

07 22 45 17 CC Okay.

07 22 45 22 LMP Forty is New Orleans, again.

07 22 45 24 CC Okay.

07 22 45 57 LMP Forty was New Orleans; 41, Mobile.

07 22 46 01 CC Copy.

07 22 46 09 CDR Is that hurricane still working?

07 22 46 12 CC Roger. Wally, it's inland now.

07 22 46 17 CDR Yes, we have it in sight.

07 22 46 27 CC It looks like it's in the northeastern corner of Florida, and it's heading - it looks like about 04 or 05 degrees.

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0 07 22 46 36 CDR We've got an eyeball on it - -  
07 22 46 37 LMP We can tell you where it is probably better.  
07 22 46 40 CC I think you probably can.  
07 22 46 57 CDR It's pretty far north; I don't think there's much  
sense in giving you a mark on it.  
07 22 47 01 CC Roger.  
07 22 47 12 CDR Frame 42 is Gladys.  
07 22 47 16 CC Copy.  
07 22 47 18 CDR It's getting a lot bigger, but not as violent,  
I gather.  
07 22 47 27 CC Wally, it's got 60 knots now, and it's supposed  
to increase as it goes out into the Atlantic.  
07 22 47 32 CDR Ah, ha.  
⊖ 07 22 47 35 LMP I assume that's well north of our track for 264-1?  
07 22 47 41 CC Affirm. We are really plotting that carefully.  
07 22 47 44 CDR Well, we are on our track right now, aren't we -  
for 264-1?  
07 22 47 48 CDR Roughly?  
07 22 47 55 CC Wally, 164-1 would have been a previous rev there.  
07 22 48 01 CDR So we're well south, yes?  
07 22 48 03 CC Roger.  
07 22 48 05 CDR I've got 260's on my mind, I guess.  
07 22 48 08 CC Roger.  
07 22 48 12 CDR We're trying to figure out whether we passed the  
duration of Gemini V yet.  
0 07 22 48 21 CC We're gonna look that up.

07 22 48 28 LMP How about a map update, Jack?

07 22 48 32 CC In work.

07 22 48 50 CC Okay. Walt, for REV 123: GET on the node 194 plus 50 plus 26, longitude will be 100.8 degrees east.

07 22 49 13 CDR Jack, we had an interesting picture of Dallas. Two aircraft apparently going over Dallas at six, and the contrails formed a wide open "v".

07 22 49 24 CC Roger. Copy.

07 22 49 27 LMP What was the time of that last map update - time?

07 22 49 30 CC Okay. 194 plus 50 plus 26.

07 22 50 06 CC Wally, I'll give you a MARK when you exceed Gemini V. It's about 5 minutes from now.

07 22 50 12 CDR Very good.

07 22 50 26 CC You guys wouldn't want to try for Gemini VII would you?

07 22 50 29 CDR Negative. Negative. Is that Deke?

07 22 50 32 CC Yes.

07 22 50 34 CDR Did you get my story on the movies, Deke?

07 22 50 37 CC Negative. Jack is going to brief me on it now.

07 22 50 40 CDR Very good. Sounds like you have a cold.

07 22 50 42 CC Yes, either you've got mine or vice versa.

07 22 50 46 CDR (Laughter)

07 22 50 48 LMP We got six blocked ears up here.

07 22 50 51 CDR I'd like to have you talk to the guys about that reentry mode, Deke.

07 22 50 59 CC Roger. We've been discussing that one.

07 22 51 02 CDR Very good. We're still pretty well stuffed up; I think the risk is greater on the ears than it is on the - no suits. We rehearsed in the couches this morning with the inflight coveralls, and we will wear our COMM carriers, of course; and we pitched down very well.

07 22 51 23 CC Very good. I still think we would probably like to get the suit donning test at least some place along here.

07 22 51 28 CDR I accept that, yes. We are really worried about our ears because of the - the problem getting the helmets off; then we really expect - big neck rings.

07 22 51 36 CC Roger.

07 22 52 40 CDR Houston, Apollo 7.

07 22 52 42 CC Go ahead, 7.

07 22 52 43 CDR Far as we can tell, this ... emergency radiator's working - you can call it secondary if you want. Should be no constraint for the next mission.

07 22 53 02 CC Roger. We agree there.

07 22 53 05 CDR Our VERBS are coming very well.

07 22 53 10 CC It sure looked like from down here watching the data.

07 22 53 13 CDR Good.

07 22 53 19 LMP We've actually been cooler because the evaporator has been running more and controlling the lower glycol temperature.

07 22 53 26 CC Roger. Copy that.

07 22 53 33 CDR According to the update computer, the update took us about 5 minutes ...

07 22 53 47 CC 7, opposite omni. We didn't copy that last one, Wally.

07 22 53 50 CDR The computer: it took us about 5 minutes just to update it.

07 22 53 56 CC Okay. We got that. Walt, when you bring the primary evaporator back on the line here, we would like to have you open the back pressure valve for 2 seconds, monitor the steam pressure in the EVAP OUT temperature for 30 seconds, then go to AUTO.

07 22 54 17 LMP Wilco.

07 22 54 53 CC Walt, can you confirm you PMP power switch in NORMAL?

07 22 55 01 LMP Okay.

07 22 55 20 CC Apollo 7.

07 22 55 21 CC MARK.

07 22 55 22 CC You're now flying longer than Gemini VIII.

07 22 55 26 CDR Roger. I guess we got 2 more man hours; that will take over 9 days. And I'm not sure how our compatriots stack up for total man hours.

07 22 55 40 CC Roger. Copy that. I made a mistake; that's Gemini V; I said Gemini VIII.

07 22 55 46 CDR No contest.

## ASCENSION (REV 121)

07 23 02 01 CC Apollo 7, Houston through Ascension.  
07 23 02 05 CDR Roger.  
07 23 04 02 CC Opposite omni, 7.  
07 23 04 07 CDR Roger.  
07 23 09 11 CC Apollo 7, 1 minute LOS Ascension; we will pick you up at Tananarive at 18.  
07 23 09 17 LMP Roger. Eighteen. And you have got an echo on that one.  
07 23 09 24 LMP Who is UCLA playing today, Jack?  
07 23 09 27 CC Stand by.  
07 23 09 32 CDR Check Standford, too, please.

## TANANARIVE (REV 121)

07 23 19 25 CC Apollo 7, Houston through Tananarive.  
07 23 25 27 CC Apollo 7, Houston. One minute LOS Tananarive. Carnarvon at 33.

## CARNARVON (REV 121)

07 23 33 57 CC Apollo 7, Houston through Carnarvon.  
07 23 34 02 LMP Roger, Jack. Hey, Jack, I'd like to make note of something. I've noticed on numerous occasions since the beginning of the flight that we can see, quite plainly, the Magellanic clouds in the southern latitudes.  
07 23 34 20 CC Roger. Copy that.  
07 23 34 23 LMP I don't believe they have ever been spotted up here before.

07 23 34 26 CC Okay. Walt, we have got a NAV vector we would like to send you, and if you will go to ACCEPT - and also I have a NAV check for you.

07 23 34 38 CDR We got to get the computer up first.

07 23 34 40 CC Oh, man, I though you were powered up.

07 23 34 44 CDR We will bring it shortly.

07 23 34 49 LMP I'll copy the PAD reference. Go ahead, what is it?

07 23 34 52 CC Okay. The NAV check PAD, the time, 193 plus 10 plus 0000 minus 1829 plus 09189 2400.

07 23 35 20 LMP Roger. Say again the time, please.

07 23 35 23 CC Roger. 193 plus 10 plus four balls.

07 23 35 32 LMP 193 100000 minus 1829 plus 09189 2400. Over.

07 23 35 39 CC Roger. That is correct, Walt.

07 23 36 15 LMP We might not be able to get state vector in the computer until the next station, Jack.

07 23 37 27 CC Hey, Walt, could you reverify the NAV check time you read back to me?

07 23 37 49 CC Apollo 7, opposite omni.

07 23 38 37 LMP - In POO; now waiting to catch up the state vector.

07 23 38 41 CC Roger. Stand by.

07 23 39 18 LMP Okay. Jack, are you going to have time to send the state vector up?

07 23 39 22 CC Roger, Walt. We've got about 4 and 1/2 minutes left here with you at Carnarvon.

07 23 39 27 CDR Okay. We are in ACCEPT. Send your message.

0 07 23 39 31 CC Coming up.

07 23 39 47 CC And, Walt, I have a T align time here for P54 to give you.

07 23 39 54 LMP Roger. Go ahead.

07 23 39 56 CC Roger. That's 193 plus 40. That is the T align for P54. We would not like you to key in this time prior to performing P53, though.

07 23 40 10 LMP Roger. Will load 193 plus 40 plus 00 after performing P53?

07 23 40 15 CC Copy that.

07 23 40 21 CC And, Walt, did you get the flight plan update to perform P52 IMU realign option 3 after the P54?

07 23 40 33 LMP Affirmative.

⊖ 07 23 40 34 CC Okay. Could you record the star angle differences and the gyro torquing angles for us?

07 23 40 39 LMP Wilco.

07 23 40 40 CC Thank you.

07 23 40 41 LMP On the P52.

07 23 40 45 CC 7, the NAV update is finished; the computer is yours.

07 23 41 50 LMP NAV - -

07 23 41 53 CC Go ahead, 7.

07 23 42 04 LMP NAV check is GO.

07 23 42 05 CC Roger. We verify.

07 23 42 16 CC Walt, can you confirm that inverter 3 is now off?

07 23 42 22 LMP No, I'm going to turn it off.

○

07 23 42 32 LMP Okay. Everything else is back in configuration, as before the secondary cold loop test. The primary evaporator did cycle down and operate for awhile.

07 23 42 42 CC Okay. Copy that.

07 23 42 44 LMP Do you want to leave the primary evaporator on the line?

07 23 42 51 CC Affirmative, Walt.

07 23 42 54 LMP Okay. It will probably end up drying out again.

07 23 42 56 CC Okay. We are about 1 minute LOS Carnarvon here. We pick you up at Guam - well, we won't get you there at Guam. It's too short a pass. We will pick you up at Hawaii on the hour.

07 23 43 11 LMP Okay. And you notice that fuel cell 2 seems to have stabilized out right at the caution and warning trigger line.

07 23 43 19 CC Roger. We are following that real close.

GUAM (REV 121)

07 23 47 37 CC Apollo 7, Houston through Guam.

07 23 47 41 SC Go ahead.

07 23 47 43 CC Roger. It was my error; we got you for about 8 minutes here.

07 23 47 50 SC You can have it.

07 23 54 07 CC Apollo 7, 1 minute LOS Guam; Hawaii on the hour.

## HAWAII through ANTIGUA (REV 121)

08 00 00 57 CC Apollo 7, Houston through Hawaii.

08 00 01 00 CDR Roger.

08 00 05 21 CC Apollo 7, Houston.

08 00 05 23 CDR Go ahead.

08 00 05 25 CC On some questions earlier: UCLA plays Calif. today, and Navy plays Pitt.

08 00 05 34 CDR Roger. Thank you. What about that ole school of yours?

08 00 05 42 CC Oh, I didn't think that would interest you - and on this relay test that we are going to do over Guaymas: when we get Guaymas AOS, I'll tell you to go the relay mode per the COMM slide rule, and then we will conduct it then.

08 00 06 07 IMP Okay.

08 00 07 29 SC Hey, Jack. Are you going to be sending up VHF and receiving S-band or vice versa?

08 00 07 38 CC We're sending up VHF and receiving S-band.

08 00 07 42 IMP Okay. Then I'll set Donn's panel up with VHF OFF and S-band TR, right?

08 00 07 51 CC No - stand by.

08 00 07 54 IMP Our slide rule is set up for you sending - for you receiving S-band and receiving VHF.

08 00 08 09 CC Walt, the configuration we want is exactly the same one on the COMM slide rule there.

08 00 08 15 IMP Okay.

08 00 13 25 CC Apollo 7, Houston.

08 00 13 28 CDR Go ahead.

08 00 13 29 CC Wally, in view of the attitude problem - display that you had on ball number 1 yesterday, we would like you to leave the FDAI select switch in the one-half position for the remainder of the flight.

08 00 13 48 CDR (Laughter) You'd have a hell of a time talking me into doing that run again; I'll clue you. I may troubleshoot it a couple of times.

08 00 13 56 CC Okay.

08 00 13 58 CDR ... data very well.

08 00 14 04 CC Well, we're just looking at it, and we don't want anything to happen and lose the display on reentry.

08 00 14 09 CDR Right. Quit while we're ahead. I've already considered not using ORDEAL on number 2 ball. I'll probably fly it that way.

08 00 14 16 CC Okay.

08 00 14 17 CDR Use GDC number 2 on reentry.

08 00 14 20 CC All right.

08 00 14 29 CC Apollo 7, we are ready to perform the relay test. Would you configure per the COMM slide rule for relay mode?

08 00 14 37 CDR Roger.

08 00 15 23 SC Houston, Apollo 7.

08 00 15 27 CC Go ahead, 7.

08 00 15 28 SC They are configured.

O

08 00 15 36 CC Okay. Apollo 7, this is Houston on S-band for the USB relay test.

08 00 15 50 CC Apollo 7, Houston. Performing the relay test: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. Okay, Apollo 7, the relay test is complete. It was an outstanding success. You can return to your normal COMM configuration.

08 00 16 21 CDR Roger.

08 00 16 42 LMP Houston, Apollo 7. How do you read?

08 00 16 43 CC Reading you five-by, Walt.

08 00 16 52 CC And, Walt, I have your block data number 21 when you are ready to copy it.

⊖

08 00 17 37 LMP Go ahead, Jack.

08 00 17 39 CC Okay. 123 dash 4 Alfa plus 295 minus 1620 194 plus 50 plus 14 2813, 124 dash 4 Alfa plus 250 minus 1635 196 plus 31 plus 45 3012, 125 dash Charlie Charlie plus 168 minus 1660 198 plus 09 plus 52 3079, 126 dash Alpha Charlie minus 223 minus 0100 198 plus 43 plus 50 7088, 127 dash Alfa Charlie minus 123 minus 0120 200 plus 17 plus 18 6447, 128 dash Alfa Charlie minus 020 minus 0180 201 plus 50 plus 35 5824. End.

08 00 20 24 LMP Readback follows: 123 dash 4 Alfa plus 295 minus 1620 194 plus 50 plus 14 2813, 124 dash 4 Alfa plus 250 minus 1635 196 plus 31 plus 45 3012, 125 dash Charlie Charlie plus 168 minus 1660 198

O

plus 09 plus 52 3079, 126 dash Alfa Charlie minus 223 minus 0100 198 plus 43 plus 50 7088, 127 dash Alfa Charlie minus 123 minus 0120 200 plus 17 plus 18 6477, 128 dash Alfa Charlie minus 020 minus 0180 201 plus 50 plus 35 5824. Over.

08 00 21 21 CC Roger. That's correct, Walt.

HAWAII through ANTIGUA (REV 122)

08 00 28 58 LMP Houston, Apollo 7.

08 00 29 01 CC Go ahead, 7.

08 00 29 02 LMP I do have the command module RCS temperatures about an hour ago. All six were reading 5 volts.

08 00 29 09 CC Roger. Thanks, Walt.

08 00 30 32 CC Apollo 7, Houston. We are 1 minute LOS Antigua; pick you up at Ascension at 38.

08 00 30 40 CDR Roger.

ASCENSION (REV 122)

08 00 38 55 CC Apollo 7, Houston through Ascension. Standing by.

08 00 39 46 CC Apollo 7, Houston through Ascension. Standing by.

08 00 40 28 CDR I read you loud and clear.

08 00 40 30 CC Roger, Wally.

08 00 41 30 LMP Houston, Apollo 7.

08 00 41 32 CC Go ahead, Apollo 7.

O

08 00 41 35 IMP Roger. Magazine Victor, frames 12, 13, and 14 were of cloud cover, my present position, taken with the red filter on.

08 00 41 51 CC Copy that.

08 00 41 52 IMP We have more Panatomic-X on board than we're going to be able to use for the multispectral stuff. Could you check and find out with the weather people if they would like to have black and white weather pictures with the red filter on or the red filter off? It's a very thin red filter.

08 00 42 12 CC Okay. It is in work.

⊖

08 00 42 17 IMP 331 000 50 dash 204. There's a Hasselblad 50 series.

08 00 42 29 CC Okay.

08 00 42 33 CDR Jack, you better check with Helmut Kuehnel on the color correction for that. It sounds like a pretty good ... but it may be pretty hard.

08 00 42 42 CC Okay, Wally.

08 00 43 58 CDR Houston, Apollo 7.

08 00 44 02 CC Go ahead, 7.

08 00 44 04 CDR Roger. The COAS is just barely bright enough for tracking against the clouds. I am not sure it would be acceptable.

O

08 00 44 17 CC I didn't get the first part, Wally.

○

08 00 44 20 CDR The COAS for ... It's so bright it just barely shows. I'm not sure it's bright enough for tracking various objects.

08 00 44 33 CC Okay.

08 00 45 11 CC 7, we're 1 minute LOS Ascension; we pick up Tananarive at 54.

08 00 45 19 CDR Roger.

TANANARIVE (REV 122)

08 00 56 15 CC Apollo 7, Houston through Tananarive.

08 00 56 18 CDR Roger.

08 00 56 22 CC Wally, on your question on Panatomic-X film and the red filter: weather says that they agree with your decision to use this film photographing clouds with the red filter on there. They do request that land, water, and clouds be included in the pictures that you take.

⊖

08 00 56 48 CDR Roger. ...

08 00 56 56 CC I couldn't copy that, Wally.

08 00 56 57 CDR We had to eliminate all the ...

08 00 57 10 CC We couldn't copy that, Wally. We will pick you up over Guam here.

08 01 01 59 CC Apollo 7, Houston. One minute LOS Tananarive; we will pick you up at Carnarvon at 10.

CARNARVON (REV 122)

08 01 13 15 CC Apollo 7, Houston through Carnarvon. Standing by.

○

O

08 01 13 19 CDR tand by.

08 01 16 46 CC Apollo 7, 1 minute LOS Carnarvon; Guam at 21.

08 01 16 51 CDR Roger ...

08 01 16 55 CC Roger. Copy that.

08 01 16 59 CDR You are reading our DSKY, I assume. Did you get the stars and the distance on program 53?

08 01 17 06 CC Negative, Wally. You went through that before we had data.

08 01 17 10 CDR Okay. Three balls 18.

08 01 17 13 CC Copy.

GUAM (REV 122)

⊖

08 01 23 52 CC Apollo 7, Houston through Guam.

08 01 23 56 CDR Roger. We're playing program 52 to now check our error.

08 01 24 03 CC Okay, Wally.

08 01 24 05 CDR The star angle difference in 54 was three balls 26, and the torquing angles we put on the tape - they were like two balls 8 something, two balls 8 something, two balls 9 something.

08 01 24 19 CC Roger.

08 01 24 21 CDR So we'll see what we really have now. Used Alpheratz and Fomalhaut.

08 01 24 30 CC Okay.

08 01 24 37 CDR We needed to use Sirius or Orion this time.

08 01 24 41 CC Roger.

08 01 26 21 CC Apollo 7, Houston.

O

0 08 01 26 23 CDR Roger.

08 01 26 25 CC Wally, what option did you select when you did P52?

08 01 26 34 CDR We took two.

08 01 26 41 LMP Star angle difference four balls 1, torquing angles are minus two balls 199, plus three balls 64, plus three balls 93.

08 01 27 00 CDR Will that do me on?

08 01 27 05 CC Stand by one.

08 01 27 07 CDR That's about two-tenths of a degree off.

08 01 27 11 CC Copy.

08 01 27 14 CDR I hope once and for all we have indicated what the heck a COAS is for.

⊖ 08 01 27 20 CC Roger. Wally, just a minute; we are having some discussion down here.

08 01 27 24 CDR If you have a check, we are off about two-tenths of a degree.

08 01 27 27 CC Roger.

08 01 27 31 CMP Did you copy my gyro torquing angles I read down?

08 01 27 34 CC Affirmative, Walt.

08 01 28 22 CC Apollo 7, Houston.

08 01 28 30 CC Apollo 7, Houston.

08 01 28 33 CDR Go ahead, Jack.

⊖ 08 01 28 34 CC Okay. Wally, we are having some discussion down here on whether we need to redo that P52, so we are requesting that you do not power down until

we get back to you. Secondly, we would like you now to switch to the secondary tanks on quad Delt Roger.

08 01 28 52 CDR Roger.

08 01 28 54 CC Okay. And while you are up there, could you give me a batt C voltage readout?

08 01 29 03 CDR Jack, we are kind of blacked out up here if you could hold on that one.

08 01 29 06 CC Okay. No problem; there is no hurry.

08 01 29 08 CDR Okay.

08 01 30 36 CC Apollo 7, Houston.

08 01 30 39 CDR Go ahead.

08 01 30 40 CC Roger. Wally, just a minute.

08 01 30 45 CDR Our navigator is arguing with that three violently up here. Soon as you get his headset on, he will start talking.

08 01 30 52 CC Okay.

08 01 30 54 LMP You reading my DSKY?

08 01 30 59 CC Roger. Four balls 1.

08 01 31 02 LMP Okay. I'm just doing a fine align check. I won't read them out to you then.

08 01 31 05 CC Okay. Just going over the hill here. The brown material that you see there and the subsequent salt development was observed on 2TV-1. What we are doing is recommending that the material be wiped off the injector and wiping cloth stowed for observation when you get back down

and the chlorination proceed as per scheduled in the flight plan.

08 01 31 30 CDR Okay. We note it crystallized out today. It is a white powder all over the place. I suspect that this stuff is inside the plumbing, too.

08 01 31 42 CC Roger. Copy that.

HAWAII through GOLDSTONE (REV 122)

08 01 37 26 CC Apollo 7, Houston through Hawaii.

08 01 37 31 CDR Roger, Houston.

08 01 37 33 CC Roger. Wally, we've looked at the data, and you can proceed with the power down..

08 01 37 39 CDR Roger.

08 01 37 40 CMP Did you get the reason I'm doing the option 2 instead of 3 in 52?

08 01 37 46 CC Negative, Donn. I guess you went over the hill too fast.

08 01 37 53 CMP Well, the reason I did that - see, if we done a three, all we would have done is find a line to the REFSMMAT determined in 54. That wouldn't tell you how accurate 54 was. It might give you some idea on how accurate the star difference angle was, but you would get - by doing 52 option 2, I got a comparison. There is a gyro torque angle in program 52 option 2, represent the error between it and the one determined in 54.

08 01 38 31 CC Okay, Donn. We're discussing that down here.

08 01 38 34 CMP Okay.

08 01 38 38 CC Opposite omni, 7.

08 01 38 43 CDR Jack, do you understand Donn's logic there?

08 01 38 50 CC We've got all of the data we need, Wally. There's some discussion on that going back and forth here, but we've got all of the data we need.

08 01 38 57 CDR Okay. Just have them check the REFSMMAT we got out of 54 - the REFSMMAT we compared to 52, and the technique you have with option 2 and 3 on 52.

08 01 39 12 CC I see some shaking of the heads, but we copy.

08 01 39 15 CMP Hey, Jack, before we quit, I did do an option 3 on that thing.

08 01 39 24 CC When did you do the option 3?

08 01 39 27 CMP After the two option 2's.

08 01 39 31 CC Okay.

08 01 39 32 CDR It's academic to the problem.

08 01 39 35 CC Okay. Could you give me a batt C voltage read-out when you get a minute? And I have a flight plan update here.

08 01 39 47 LMP Batt C is 36.0.

08 01 39 49 CC Copy.

08 01 39 50 CDR Go ahead with your flight plan update.

08 01 39 53 CC Okay. We want to do a fuel cell O<sub>2</sub> purge at 195 plus 00.

08 01 40 07 LMP Roger. Proceed.

08 01 40 13 CC Okay. That's it.

08 01 40 16 CDR Okay.

08 01 40 32 CC Apollo 7, we would like you to delay the power down. We're going to have a NAV load for you.

08 01 40 41 CDR Going too slow. Our computer's still going-going around; the IMU's going.

08 01 40 46 CC Okay. We'll be ready for you in just a minute. Wally, I would like to get some feel from you on how long you think it would take you to doff suits.

08 01 41 00 CDR To doff the suits?

08 01 41 01 CC Roger.

08 01 41 02 CDR What's the occasion? You have to explain the reasoning behind our doff. I can cut it off, or I can take it off.

08 01 41 21 CC Roger. When you were inserted and you got - you doffed the suits, about how long do you figure it took you to take them off and stow them?

08 01 41 32 CDR Oh, you mean as we started the mission?

08 01 41 35 CC Affirmative.

08 01 41 36 CDR Yes, because there's where you're taking the suit off to protect it, and you put it away very carefully. I'd say it took about 30 to 35 minutes.

08 01 41 46 CC Okay. Copy that.

08 01 41 47 CDR Wait a minute; wait a minute.

08 01 41 53 CDR Well, Jack, what we did: we did it in stages. We took the helmets and gloves off after early GO, and then the suits off after seventeenth or sixteenth one.

08 01 42 07 CC Wally, could you go to ACCEPT, and we'll send this load up? .

08 01 42 15 CDR We're going to get squared away on this in just a second.

08 01 42 18 CC Okay.

08 01 42 23 CDR We'll get FOO straightened up, and you can have it.

08 01 42 26 LMP You've got it now, Jack.

08 01 42 27 CC Okay. Coming up. I'll read you the NAV check when you are ready.

08 01 42 31 LMP Okay.

08 01 42 37 CDR Go ahead on the NAV check.

08 01 42 38 CC Okay. Time: 199 plus 30 plus four balls plus 1589 plus 05853 1875.

08 01 42 59 CDR Roger.

08 01 43 55 CC Apollo 7, Houston.

08 01 43 57 CDR Go ahead.

08 01 43 59 CC Roger. We would like you to stand by on any power down till we pick you up in Guaymas.

08 01 44 05 CDR We've already powered-down, Jack. Do you want me to bring it back up?

911

08 01 44 09 CC Negative. We didn't quite finish the NAV load.  
We want to pick it up here at Guaymas.

08 01 44 13 CDR Okay. The computer is still going, still going.

08 01 44 16 CC Okay.

08 01 44 17 CDR We'll keep the computer going.

08 01 44 19 CC Roger.

GUAYMAS (REV 122)

08 01 49 21 CC Apollo 7, Houston.

08 01 49 24 CDR Go ahead, Jack.

08 01 49 25 CC Okay. We verified the load that we sent up, and  
the computer is yours; you can go ahead and be-  
gin powering down.

08 01 49 32 CDR Okay.

08 01 50 26 CDR Okay. Jack, we buy it.

08 01 50 29 CC Okay. Roger. Good news.

TEXAS (REV 123)

08 01 55 36 CC Apollo 7, Houston. One minute LOS Texas; As-  
cension at 17.

08 01 55 42 CDR Roger.

ASCENSION (REV 123)

08 02 17 28 CC Apollo 7, Houston through Ascension.

08 02 17 32 CDR Roger, League City. Loud and clear.

08 02 17 37 CC Wally, you're loud and clear, also.

08 02 17 40 CDR Roger.

08 02 17 53 CC Wally, one point: because of the visibility  
problem that we've had in window number 3, if

you'd like, we have some simple instructions which would provide you with 55- and 90-degree roll lines on window number 2.

08 02 18 11 CDR It's cleared up enough to where we can ... the center the last couple of days. But we can live with it. We can't shoot pictures out of it or see detail out of it.

08 02 18 24 CC Okay. Real fine. Copy that.

08 02 18 33 CDR Are we on FM?

06 02 18 37 CC We're transmitting both.

08 02 18 40 CC Okay. What is satisfactory for bank angles on reentry?

08 02 18 45 CC Okay. Copy that, Wally.

08 02 18 52 CC We're 40 seconds LOS Ascension; we pick up Tananarive at 29.

08 02 18 57 CDR Roger.

08 02 30 22 CC Apollo 7, Houston through Tananarive. Standing by.

08 02 30 27 LMP ... through Tananarive yet?

08 02 30 31 CC Say again.

08 02 30 36 LMP Checking to see if you could hear through Tananarive.

08 02 30 39 CC Roger. We are reading you five-by.

08 02 30 45 LMP It's dinner time here.

08 02 39 12 CC Apollo 7, Houston. One minute LOS Tananarive; the Mercury at 54.

08 02 39 20 CDR Thank you.  
MERCURY (REV 123)

08 02 55 16 CC Apollo 7, Houston through the Mercury. Standing  
by.

08 02 55 20 LMP Roger, Jack.

08 02 57 30 CC Apollo 7, opposite omni.

08 02 59 28 LMP Hey, Jack, are you still there?

08 02 59 31 CC Roger. Walt, go ahead.

08 02 59 34 LMP Roger. If you get a chance, maybe we could get  
an updated RCS number for our chart.

08 02 59 39 CC Okay. In work.  
GUAM (REV 123)

08 03 03 22 CC Apollo 7, Houston.

08 03 03 24 LMP Go ahead, Jack.

08 03 03 26 CC Roger. Your chart value for RCS today, Walt,  
is 588. It shows a little bit larger usage  
than we expected, and we can't account for it  
at this time. We're going back over the data  
and looking at it.

08 03 03 43 LMP Roger.

08 03 04 21 CC Apollo 7, Houston.

08 03 04 23 LMP Go ahead, Jack.

08 03 04 25 CC Just for the record, you might help us out and  
give us some clues about how much you think you  
used today.

08 03 04 34 LMP Oh, I don't really know - I think all we did was - we didn't do any ... around. The pictures: we probably used a pulse or two on that. We did the alignments and did a little maneuvering then and then the maneuverings of the alignments.

08 03 05 01 CC Okay. Copy that. We're about 1 minute LOS Guam; we'll pick up Hawaii at 13.

08 03 50 12 LMP Roger.

HAWAII (REV 123)

08 03 13 53 CC Apollo 7, Houston through Hawaii. Standing by.

08 03 13 58 LMP Roger. Jack, need a map update if you can get it, and I'd just as soon have one that's not two revs ahead, if you can get it.

08 03 14 05 CC Sure can. In work.

08 03 14 25 LMP I took a weather picture at 195 hours and 13 minutes, magazine V as in Victor, frame number 14.

08 03 14 37 CC Okay. Copy that, Walt. When would you like the map update? This rev?

08 03 14 46 LMP Yes, the next ascending node if you have it.

08 03 14 54 CC Okay. Stand by. Okay, Walt. The GET of the next ascending node, REV 124 will be 196 plus 20 plus 48 with a longitude of 7.77 degrees east.

08 03 15 45 LMP Roger.

HUNTSVILLE (REV 123)

08 03 24 08 CC Apollo 7, Houston. One minute LOS Huntsville; Tananarive at 196 plus 05.

08 03 24 17 LMP Thank you.  
TANANARIVE (REV 124)

08 04 05 52 CC Apollo 7, Houston through Tananarive. Standing  
by.

08 04 06 41 CC Apollo 7, Houston through Tananarive. Standing  
by.

08 04 15 12 CC Apollo 7, Houston. One minute LOS Tananarive;  
Mercury at 30.  
MERCURY (REV 124)

08 04 30 31 CC Apollo 7, Houston through the Mercury. Standing  
by.

08 04 30 36 LMP Roger. Jack, we've got a readout on our O<sub>2</sub>  
manifold pressure.

08 04 30 44 CC Walt, we don't have data yet from the Mercury.  
Stand by.

08 04 31 06 CDR Houston, Apollo 7.

08 04 31 09 CC Go ahead, Wally.

08 04 31 11 CDR I assume from the radar transponder test that  
we successfully completed - that we do not re-  
quire doing that again. Is that correct? Are  
we going to back up in case the first one fails?

08 04 31 28 CC Wally, you are correct there in that assumption.  
We're going to have a general update on tomorrow's  
activities for you over Hawaii.

08 04 31 37 CDR Okay.

08 04 32 01 CC Apollo 7, Houston. Opposite omni.  
08 04 32 05 CDR Roger.  
08 04 33 13 CC Apollo 7, Houston. We're ready to read that out,  
the O<sub>2</sub> manifold pressure out.  
08 04 33 18 LMP What do you have?  
08 04 33 20 CC We have 102 now.  
08 04 33 27 LMP Okay. Try again.  
08 04 33 29 CC Roger. 105.  
08 04 33 32 LMP Have you done the component check as GO?  
08 04 33 46 CC Roger.  
GUAM (REV 124)  
08 04 36 01 CC Apollo 7, opposite omni.  
08 04 38 32 CC Apollo 7, Houston. One minute LOS Guam; Hawaii  
at 49.  
08 04 38 39 LMP Roger, Jack.  
08 04 38 54 LMP What are you going to do with your weekend, Jack?  
08 04 38 57 CC Oh, I think I'll just hang around mission control.  
08 04 39 03 LMP They'll give you a lot to do.  
HAWAII through HURTSVILLE (REV 124)  
08 04 49 26 CC Apollo 7, Houston through Hawaii.  
08 04 49 31 LMP Thanks, Jack.  
08 04 49 42 LMP Hey, Jack, give the LMP 15 clicks of water.  
08 04 49 46 CC Okay. I am logging that, Walt. Is Wally moni-  
toring?  
08 04 49 55 LMP Yes, he's monitoring.



08 04 49 57 CC

Okay. Just generally, on tomorrow's activities: we are going to tailor them to accomplish the objectives based on what we know to date. We are going to remain above the service module RCS DAP redline, and we'll curtail any activities to remain so. Basically, what we are going to do, and this is generally, because the exact times they are still working on. We are going to delete the rendezvous radar test during tomorrow; we are going to perform burn 6 as per the normal flight plan, and in that period from 211 to 219, we are going to have the following four activities: two revs of orbital navigation, using the 9-by-9 W matrix; one PTC - it will be just like the preceding test except it will be about the pitch axis there; we are going to do the pitch instead of a roll - and one P22 horizon sighting test for horizon definition and generally for the television tomorrow. Basically, with the activities that are planned, we felt that if you just turn it on and proceed with your regular flight plan activities, that would be fine.



08 04 51 33 CDR

Okay. We'll have it mounted above the tunnel and just let it go.



08 04 51 38 CC

Okay. And some information has come about the discussion on the reentry configuration. Right

now, the thinking is to have the suits on for entry, to provide a heel of restraint. The helmets and glove question is still in question.

08 04 52 05 CDR Hey, now that's pretty immature; we were going to launch without that kind of special heel restraint. And then all of a sudden, they got worried about land landing, and they put it in. If you are worried about a water landing for heel restraint, we got a long way to go before we can call this thing a flying machine.

08 04 52 23 CC Hey, Wally.

08 04 52 24 CDR Yes.

08 04 52 26 CC You did have heel restraint before, anyway, and I think the only concern here is that if you do get a tumbling even on the water, your legs can end up flailing around, and that clearance between your knees and the MDC, as you remember, has always been a bit of a concern. Think it's just an attempt here to make darn sure you don't have some leg damage is all.

08 04 52 47 CDR Yes, but how about our heads? With that neck ring laying out there, we don't fit the couch too well.

08 04 52 55 CC I missed that one.

08 04 52 56 CDR We intended to fix the headrest to prop our heads in, and without a helmet, we're pretty

floppy on the head part, which you'll expect on any kind of landing.

08 04 53 08 CC Okay. Well, yes, I think you got to be able to clear your ears, and whatever is the best way to do that, obviously we are going to have to do.

08 04 53 14 CDR Yes, we are in trouble on the ears, Deke; no way out of that.

08 04 53 19 CC I think as far as what happens from 10 000 feet on down, we need to discuss in some more detail.

08 04 53 26 CDR Yes.

08 04 53 28 CC Okay. We'll think about - -

08 04 53 29 CDR We bought the cabin a long time ago, so we're not worried about it.

08 04 53 34 CC Yes, nobody else is either; that's not the concern.

08 04 53 38 CDR Yes, I take it it's the foot restraint you are worried about.

08 04 53 41 CC That's affirmative; that's the only concern, is your legs rattling around down there.

08 04 53 45 CDR Yes.

08 04 53 46 CC You might give that one some thought, because we've talked that one around previously as you remember.

08 04 53 51 CDR Right. I should have prepared for something like this, but I didn't expect a cold. We

might tape our feet to the foot restraints; that's about all I can think of. We've got a lot of tape left up here. That doesn't sound like too easy a job, but it is really easy at zero g. We could cut the tape off with our surgical scissors when we land.

08 04 54 19 CC Yes.

08 04 54 21 CDR Deke, kick that one around, anyway.

08 04 54 25 CC That doesn't sound too great, Wally.

08 04 54 27 CDR Say again.

08 04 54 28 CC That doesn't sound too great; you can think of lots of contingencies that that would give you real trouble with.

08 04 54 38 CDR What, getting our feet out?

08 04 54 40 CC Yes.

08 04 54 50 CC We don't have to settle it today, but I think you ought to be thinking about it. I think the prime concern here is ending up with some broken kneecaps, and that sort of thing, which you are well aware of the arguments there. And I guess you prefer to have a couple of good ones to walk off on.

08 04 55 05 CDR Yes, right. I know it's taken me 3 or 4 weeks at least to get away from a bad case of ears and all three of us have those.

08 04 55 12 CC Yes, and - -

○ 08 04 55 13 CDR I'm afraid that we can't wear the helmets down; that's the first conclusion. And whether they come off at 10 000 or where we are right now is rather academic.

08 04 55 24 CC Okay. Well, I guess - well, we've been thinking to clear the air on this one a bit, is that you probably ought to don the suits in any case, and have the heel protection - okay. Then the question of whether you put helmets on and where you release them; whether you can clear your nose with it on, and not tied to the neck ring or off I think that's all subject to some discussion. You guys got a better feel for that than anybody else.

○ 08 04 55 52 CDR Okay. ... we've been thinking about this for a week.

08 04 55 56 CC We're about at LOS; we'll have to carry this on at some later date.

08 04 56 02 CDR Okay. We'll work on it.

08 04 58 57 CC Apollo 7, Houston. One minute LOS Huntsville; Tananarive at 42.

08 04 58 03 CDR Roger.

08 04 59 54 CT Huntsville LOS.

TANANARIVE (REV 125)

○ 08 05 44 23 CC Apollo 7, Houston. Tananarive standing by. Good afternoon.

08 05 44 28 CDR ...

08 05 49 55 CC Apollo 7, Houston. One minute LOS; Mercury at 06.

08 05 50 00 CDR Okay.

MERCURY (REV 125)

08 06 06 48 CC Apollo 7, Houston through Mercury. Standing by.

08 06 06 53 CDR Roger. Loud and clear.

08 06 06 54 CC Roger. The same.

08 06 07 10 CC Apollo 7, Houston. Opposite omni.

08 06 13 24 CC Apollo 7, Houston. One minute LOS; Hawaii 25.

08 06 13 29 CDR Roger.

HAWAII (REV 125)

08 06 25 38 CC Apollo 7, Houston through Hawaii. Standing by.

08 06 25 42 CMP Hello, Bill.

08 06 25 44 CC Good morning.

08 06 25 47 CMP How are you?

08 06 25 49 CC Great. You're getting up earlier and earlier.

08 06 25 52 CMP Sure seems like it. What time is it?

08 06 25 56 CC It's 4:30.

08 06 25 58 CMP Say again.

08 06 26 00 CC 16 30.

08 06 26 02 CMP Okay. Got you. I thought so but wasn't sure.

08 06 26 15 CC Apollo 7, Houston. Opposite omni.

08 06 26 18 CMP Roger. Opposite omni.

08 06 26 27 CMP Hello, Ron, log ten clicks of water for CDR and five clicks for LMP.

08 06 26 34 CC Roger.

08 06 26 35 CMP And log me 7 hours of very fine sound sleep.

08 06 26 40 CC Hey, great.

08 06 27 02 CC Apollo 7, Houston.

08 06 27 05 CMP Go.

08 06 27 07 CC Roger. Request O<sub>2</sub> tank 2 fan on for 5 minutes,  
then off.

08 06 27 14 CMP Okay. It's on.

08 06 30 38 CC LOS; Redstone 40.

08 06 30 40 CMP Okay.  
REDSTONE (REV 125)

08 06 41 08 CC Apollo 7, Houston through Redstone. Standing by.

08 06 41 13 CMP Roger, Houston.

08 06 41 15 CC Roger. Loud and clear.

08 06 44 30 CC Apollo 7, Houston.

08 06 44 34 CMP Go, Houston.

08 06 44 36 CC Roger. Verify O<sub>2</sub> tank 2 fan OFF.

08 06 44 42 CMP Roger. It's still ON; I'll get it in a minute.

08 06 44 44 CC Roger.

08 06 45 22 CC Apollo 7, Houston. One minute LOS; Ascension  
at 05.  
ASCENSION (REV 126)

08 07 07 18 CC Apollo 7, Houston through Ascension. Standing  
by.

08 07 12 08 CC Apollo 7, Houston. One minute LOS; Mercury at  
42.

08 07 12 14 CMP Roger.  
MERCURY (REV 126)

08 07 43 33 CC Apollo 7, Houston through Mercury. Standing by.

08 07 43 38 CMP Hello, Houston, Apollo 7.

08 07 43 41 CC Roger. Loud and clear.

08 07 45 20 CMP Got any ball scores yet?

08 07 45 24 CC Roger. Would you believe Kansas beat Oklahoma State 28 to 6?

08 07 45 31 CMP I see.

08 07 45 36 CC Oklahoma beat Iowa State 42 to 7.

08 07 46 05 CMP How did Houston and Rice do?

08 07 46 10 CC Haven't got - don't have that one yet, Donn; we're working on it.

08 07 46 14 CMP I see.

08 07 46 19 CMP Have you got Southern Cal and Ohio State?

08 07 46 25 CC Not yet. Got Tennessee 10, Alabama 9; Georgia Tech 21 and Auburn 20.

08 07 46 36 CMP Couple of close ones.

08 07 46 38 CC Roger.

08 07 47 50 CC 7, be advised the Mercury's doing a good job down there. They're taking rolls up to about 20 degrees and 40- to 50-knot winds, some 15-16-foot waves, and we're still getting good data coming through.

08 07 48 06      CMP      Wow, sounds like they're having a high old time. Where are they exactly? Is there a big storm in their area; is that what's going on?

08 07 48 16      CC      Well, the typhoon is coming on them from the Phillipines, and they're up around Taiwan, somewhere in that area.

08 07 48 25      CMP      Oh, yes. Up at Taiwan, you say?

08 07 48 30      CC      Somewhere around in there.

08 07 48 32      CMP      Yes. That's kind of a bad place to be with that typhoon going on there.

08 07 48 38      CC      Yes, I think they're going to ride it out.

08 07 48 45      CMP      I don't think they have much choice.

08 07 48 48      CC      That's what they said. We got word that they're a little green, and it's not exactly green with envy.

08 07 49 05      CMP      Ron.

08 07 49 35      CMP      Hey, Ron.

08 07 49 37      CC      Roger.

08 07 49 38      CMP      We, at least Walt and I, started drinking out of our little plastic bags instead of the water gun because it's too hard to work anymore. Something's wrong with the trigger. I estimate I've had about 16 to 20 ounces of water in an hour or so using the plastic bag.

GUAM (REV 126)

08 07 51 14      CC      7, Houston through Guam now.

08 07 51 43 CC Apollo 7, Houston.

08 07 51 46 CMP Go.

08 07 51 48 CC Roger. Did the drink gun stick completely now,  
or is it still just hard to operate?

08 07 51 53 CMP It works; it's just real hard to operate.

08 07 51 57 CC Roger.

08 07 52 49 CC 7, Houston. LOS; Redstone at 14.

08 07 52 53 CMP Roger.  
REDSTONE (REV 126)

08 08 14 38 CC Apollo 7, Houston through Redstone..

08 08 14 43 CMP Roger.

08 08 14 44 CC Roger. Loud and clear. I have a one-line  
flight plan update.

08 08 14 53 CMP Go ahead.

08 08 14 55 CC Roger. At 204 plus 20, delete "Radar transponder  
self-test."

08 08 15 06 CMP Roger. I got it.

08 08 15 08 CC Roger.

08 08 17 45 CC Say, Donn.

08 08 17 48 CMP Go, Ron.

08 08 17 49 CC Roger. At 201 plus 24, you'll be passing right  
over Typhoon Gloria.

08 08 17 59 CMP Okay. I'll try to get a look at it, a picture  
if possible.

08 08 18 03 CC Roger. That's right over the center.

08 08 18 07 CMP Okay. Thank you.

08 08 19 18 CMP Ron, could you get me a map update, please?

08 08 19 23 CC Wilco.

08 08 19 49 CC 7, Houston. Are you ready to copy?

08 08 19 53 CMP Yes, go ahead.

08 08 19 54 CC Roger. REV 126 GET 199 plus 21 plus 32, longitude 31.4 east.

08 08 20 13 CMP Okay. Thank you.

08 08 20 14 CC Roger.

08 08 22 40 CC 7, Houston. Thirty seconds LOS; Ascension at 40.

08 08 22 45 CMP Roger.

ASCENSION (REV 127)

08 08 40 28 CC Apollo 7, Houston through Ascension. And I have some battery ampere-hours remaining.

08 08 40 50 CMP You know, this bird with all of its windows makes a hell of a planetarium.

08 08 40 59 CC You mean, it's kind of hard to see.

08 08 41 02 CMP No, it's very good to see.

08 08 41 04 CC Great.

08 08 41 06 CMP Boy, you can really spot them.

08 08 41 32 CMP Go ahead, Ron.

08 08 41 35 CC Roger. Batt A 28.9, B 26.5, C 39.5, Lima Sierra 073 slant NA.

08 08 41 59 CMP Roger. I understand.

08 08 46 02 CC Apollo 7, Houston. Opposite omni.

08 08 46 07 CMP Roger.

08 08 50 34 CC Apollo 7, Houston. About LOS; pick you up at Mercury, 18.

08 08 50 40 CMP Roger.

MERCURY through GUAM (REV 127)

08 09 18 40 CC Apollo 7, Houston through Mercury.

08 09 18 45 CMP Roger, Houston.

08 09 18 49 CC Roger. Donn, I've got block data to send up there and work; try to work it in around checking for the typhoon now. So let me know when you want it.

08 09 18 59 CMP Okay. Fine. Thanks, Ron.

08 09 20 30 CC And - T, Houston - we would like for you to do the CMC power up prior to Redstone, and then we'll update your W matrix over Redstone this pass.

08 09 20 41 CMP This pass? Okay; will do.

08 09 21 50 CMP I think I've got the storm here.

08 09 21 53 CC Good.

08 09 22 46 CMP I'll have to say it really covers a huge area.

08 09 22 56 CC Can you kind of determine where the eye is?

08 09 23 02 CMP Well, not exactly; hold it a second, hold the phone, I think I do have it. We're going right over the eye, Ron, and I'll give you a mark when we're directly over it.

08 09 23 36 CC Roger.

08 09 23 50 CMP MARK.

08 09 23 52 CC Roger. 23 50.

08 09 24 33 CMP Hey, Ron, are you there?

08 09 24 34 CC Affirmative. Go.

08 09 24 36 CMP Okay. Frames 54 and 55 of magazine Ro were of typhoon Gloria, and 35 is a picture of the eye.

08 09 24 47 CC Roger.

08 09 24 51 CMP At least that's what it looked like to me.

08 09 24 57 CC That's about right on time; that's where they forecasted.

08 09 25 01 CMP ... you could see the long straight through ... circulation in the thing and then there was almost a solid mass of white right into the eye, then there was this little peephole in the middle of it. You could see there were some scattered and broken clouds in it. You could see the water even through it.

08 09 25 26 CC Well, I'll be darned.

08 09 25 28 CMP Very interesting.

08 09 25 31 CC Yes.

08 09 25 33 CMP How's the Mercury group holding up out there?

08 09 25 38 CC I think they're still green.

08 09 25 42 CMP I'll bet they are.

08 09 27 43 CC Apollo 7, Houston. Opposite omni.

08 09 27 49 CMP Roger.

08 09 27 51 CC It's a good thing we don't log those transmissions.

08 09 27 57 CMP What's that?

08 09 27 58 CC Opposite omni type.

08 09 28 01 CMP Yes.

08 09 30 14 CC Apollo 7, Houston. Thirty seconds LOS; Redstone at 49.

08 09 30 19 CMP Could I get your block update then?

08 09 30 22 CC Roger.

REDSTONE (REV 127)

08 09 50 41 CC Apollo 7, Houston through Redstone.

08 09 51 10 CC Apollo 7, Houston.

08 09 51 56 CC Apollo 7, Houston. Trying again.

08 09 52 24 CC Apollo 7, Houston. How do you read?

08 09 52 46 CC Roger. Donn, you're not getting back to us.

The Redstone M and O is relaying. If you want me to read the block data up, then you can read it back over Ascension.

08 09 54 35 CC Apollo 7, Houston transmitting in the blind. I'll give you block data for area 129, the rest over Ascension. 129 dash Alfa Charlie plus 080 minus 0250 203 plus 23 plus 55 5190.

08 09 55 22 CT Redstone LOS. Redstone reacquiring.

08 09 55 37 CT Redstone LOS. Redstone reacquiring.

08 09 55 53 CT Redstone LOS.

08 09 56 19 CC Apollo 7, Houston in the blind. We will send your W matrix over Ascension. Keep the CMC powered up.

08 09 56 41 CT Redstone LOS. Redstone AOS.

08 09 57 21 CC Apollo 7, Houston. Ascension at 16.  
ASCENSION (REV 128)

08 10 16 03 CC Apollo 7, Houston through Ascension.

08 10 16 10 CMP Roger.

08 10 16 11 CC Roger. Loud and clear this time, Donn, and I  
have the block when you're ready.

08 10 16 41 CMP Okay, Ron. Go ahead.

08 10 16 48 CC Roger. Are you in ACCEPT? Then we will send  
the W matrix update.

08 10 16 54 CMP Okay. You have it.

08 10 16 59 CMP I got your 129 update.

08 10 17 01 CC Okay. I'll start with area 130 dash 2 Alfa  
plus 192 minus 0270 204 plus 58 plus 45 4399.

08 10 17 29 CC Apollo 7, Houston. Switch omni.

08 10 17 39 CMP Okay. Go ahead.

08 10 17 42 CC Roger. 131 dash 2 Charlie plus 271 minus 0271  
206 plus 35 plus 31 3774, 132 dash 1 Charlie plus  
237 minus 0620 208 plus 02 plus 22 4055, 133 dash  
1 Alfa plus 294 minus 0600 209 plus 40 plus 53  
3367, 134 dash 1 Alfa plus 299 minus 0600 211  
plus 20 plus 43 2938. Over.

08 10 19 32 CMP Roger. 129 dash Alfa Charlie plus 080 minus  
0250 03 23 55 5190, 130 dash 2 Alfa plus 192  
minus 0270 204 58 45 4399, 131 dash 2 Charlie  
plus 271 minus 0271 206 35 31 3774, 132 dash  
1 Charlie plus 237 minus 0620 208 02 22 4055,

133 dash 1 Alfa plus 294 minus 0600 209 40 53  
33 67, 134 dash 1 Alfa 299 minus 0600 211 20  
43 2938.

08 10 20 34 CC Apollo 7, Houston. Your readback correct.

08 10 20 47 CC Apollo 7, Houston. Our link is complete; you  
can power down.

08 10 20 54 CMP Okay. I'll put it back to bed.

08 10 20 56 CC Roger.

08 10 21 42 CC A couple more football scores here if you want.

08 10 21 46 CMP Oh, okay. Go ahead.

08 10 21 49 CC Roger. Air Force over Colorado State 31 to  
nothing.

08 10 21 55 CMP Wow. They're coming up in the world.

08 10 21 59 CC Roger. Navy over Pittsburg 17 to 16.

08 10 22 03 CMP Navy over who?

08 10 22 05 CC Pittsburg.

08 10 22 06 CMP Oh, that's very good.

08 10 22 10 CC California over UCLA 39 to 15. Purdue eked out  
one 28 to 27 over Wake Forest. Michigan 27,  
Indiana 19. Minnesota beat Michigan State 14  
to 13.

08 10 23 03 CC Notre Dame 58, Illinois 8. Still don't have  
any Texas games yet.

08 10 23 20 CMP Ron, what did you say that California - UCLA  
score was?

08 10 23 23 CC 39 California, 15 UCLA.

08 10 23 47 CMP How about Ohio State? Do you have them there?

08 10 23 56 CC Say again, Donn. Opposite omni.

08 10 24 02 CMP Roger. Ohio State.

08 10 24 04 CC Roger. Ohio State 45, Northwestern 21.

08 10 24 27 CMP Roger.

08 10 25 10 CC 7, Houston. One minute LOS; Mercury at 54.

08 10 25 18 CMP Okay.

08 10 25 19 CC We show your waste quantity 84. You can dump your convenience or wait till the other guys get up.

08 10 25 27 CMP Okay. I'll get on it in a little while.

08 10 26 24 CC Ascension must have a good radar. They've beat our LOS times every time.

08 10 26 31 CMP Yes, they do all right.  
MERCURY (REV 128)

08 10 57 04 CC Apollo 7, Houston through Mercury. Or try a voice check. Pretty poor.  
GUAM (REV 128)

08 11 00 29 CC Apollo 7, Houston through Guam.

08 11 01 10 CC Apollo 7, Houston through Guam.

08 11 01 13 CMP Roger, Houston.

08 11 01 14 CC Roger. Loud and clear. Donn, I've got a flight update when you're ready to copy.

08 11 01 21 CMP Okay. Go ahead.

08 11 01 23 CC Roger. Normal flight plan through SPS burn number 6. GETI about 210 plus 08. At 207 plus 20,

fuel cell oxygen purge. At 211 plus 40, MCC update P22 horizon sightings. 212 plus 05 as scheduled. 213 plus 00 to 217 plus 30, delete all scheduled activity. 213 plus 00, add MCC update, state vector, NAV check, P22 landmark data. 213 plus 10, TV turnon; 213 plus 12 to 213 plus 23, TV pass. Still with me, Donn?

08 11 03 57      CMP      Still with you.

08 11 03 59      CC      213 plus 40, P22 horizon sightings.

08 11 04 13      CMP      Ron, I don't understand that. What in the world is a P22 horizon sighting?

08 11 04 22      CC      Roger. What we're trying to do is get a hack on the difference between the real horizon and what you think the horizon is. And we'll pass up some more data on that later.

08 11 04 39      CMP      Say, this is a new one on me; I don't know anything about this.

08 11 04 42      CC      That's affirmative. We'll - I've got some information to pass up to you.

08 11 04 47      CMP      Okay.

08 11 04 50      CC      Okay. At 214 plus 10, P52 IMU realign option 3. At 214 plus 45, start P22 landmark tracking pass. At 215 plus 30, MCC update P22 landmark data. At 216 plus 00, MCC state vector, if required. At 216 plus 15, start P22 landmark tracking pass. At 217 plus 15, power down.

## REDSTONE (REV 128)

08 11 26 13 CC Apollo 7, Houston through Redstone. Standing by.

08 11 26 17 CMP Roger, Houston.

08 11 26 18 CC Roger. Loud and clear, Donn. Did you copy everything on that?

08 11 26 24 CMP Wait just a second.

08 11 26 36 CMP I'm going to check the waste water in about a minute or two.

08 11 26 41 CC Roger.

08 11 26 42 CMP What I got was a normal flight plan adding a fuel cell O<sub>2</sub> purge at 27 20. Is that what you gave me? 27 20, is that right?

08 11 26 55 CC Yes.

08 11 26 57 CMP Coming up on burn at 210 08. I have at 211 40 P22 horizon sightings. Is that right?

08 11 27 12 CC Yes. I'll update you. The information, at that time, - it is an MCC update at that time.

08 11 27 18 CMP Okay. That's the information. Wait a second.

08 11 27 32 CMP Got 213 on the hour. We got state vector, NAV check, and P22 landmark data, right?

08 11 27 41 CC Affirmative.

08 11 27 42 CMP Okay. Then we have a TV pass starting at 12 and running through 24, is that it?

08 11 27 50 CC Roger. Through 23.

08 11 27 52 CMP Okay. Turn the TV on in 10 minutes, anyway, at 23 10.

08 11 27 55 CC Roger.

08 11 27 57 CMP We got P22 horizon check, whatever that is, at 213 40?

08 11 28 03 CC Roger.

08 11 28 12 CMP A P22 opposite 214 10 start of P22 landmark tracking at about 214 25, I guess that is; anyway, the date matches. And get more P22 data at 215 30.

08 11 28 34 CC Roger.

08 11 28 37 CMP An updated state vector of 216 - P22 again at 216 150.

08 11 28 46 CC Roger.

08 11 28 48 CMP And power down at 217 15.

08 11 28 51 CC Roger. And if you notice, this goes into your sleep period, so we recommend that you change your sleep periods and move it back 2 hours - everybody back 2 hours.

08 11 29 07 CMP Stand by one; I've got to shut the water off.

08 11 29 10 CC Roger. We show 24 percent now.

08 11 29 18 CMP You show 24?

08 11 29 20 CC Oops, we just lost date again.

08 11 29 24 CMP Okay. I'm reading about 15 in here now; I'm going to shut it off.

08 11 29 32 CC Roger. We concur.

08 11 29 56 CMP Still got that big water bubble around the fitting.

○ 08 11 30 03 CC Great.

08 11 30 12 CMP It's really funny looking; it's a big - almost a sphere about as big around as a silver dollar, hanging on the wall by the fitting for the water dump.

08 11 30 22 CC Well, I'll be darned. Is the leak between hose and the fitting or between the fitting, and the panel?

08 11 30 45 CC Donn, does it leak between the hose and the fitting and - or between the fitting and the panel?

08 11 30 51 CMP It's between the fitting and the panel - the water service panel.

⊖ 08 11 30 54 CC Roger.

08 11 30 55 CMP It leaks - are on that P-nut, that you tighten down on to get the fitting on.

08 11 31 01 CC Roger.

08 11 31 06 CMP It doesn't hurt anything; it's just a big blob and stays there until you wipe it up.

08 11 31 48 CC 7, Houston.

08 11 31 49 CMP Right.

08 11 31 50 CC Roger. On this passive thermal control test tomorrow, we want to use the same procedures that you have on board except we want to pitch instead of roll.

○ 08 11 32 12 CMP Okay. This is the one on 212, is that it?

08 11 32 14 CC Say again.

08 11 32 17 CMP This is the one the strength of 212 hours?

08 11 32 22 CC That's affirmative.

08 11 32 25 CMP Okay.

08 11 32 29 CC Your procedure is written up to roll, but we want the pitch about the Y-axis.

08 11 32 35 CMP Okay. Same deal; we just substitute a pitch for a roll, is that right?

08 11 32 38 CC That's affirmative.

08 11 32 40 CMP You want the same rate, 310?

08 11 32 43 CC Affirmative.

08 11 32 45 CMP Okay.

08 11 34 31 CC Apollo 7, Houston. One minute LOS. I have some good news for you at Canaries at 57.

08 11 34 39 CMP What did you say again?

08 11 34 41 CC Roger. Canary at 57.  
CANARY (REV 128)

08 11 57 53 CC Apollo 7, Houston through Canaries.

08 11 58 51 CC Apollo 7, Houston.

08 11 58 56 CMP Roger. Houston, Apollo 7.

08 11 58 57 CC Roger. Loud and clear. Donn, when Wally and Walt wake up, have them remove their BIOMED harnesses and stow carefully for postflight malfunction analysis. Over.

08 11 59 26 CMP Good.

08 12 04 04 CC 7, Houston. One minute LOS; Redstone at 01.

08 12 04 10 CMP Roger. I understand.

## REDSTONE (REV 129)

08 13 01 43 CC Apollo 7, Houston through Redstone.

08 13 01 47 CDR Houston, Apollo 7.

08 13 01 48 CC Roger. Loud and clear.

08 13 01 51 CDR Roger.

08 13 04 41 CC Apollo 7, Houston. I have the procedures for your P22 horizon sighting if you'd like to copy.

08 13 04 50 CDR Roger. Stand by.

08 13 04 52 CC Roger. Select P22, use unknown landmark option. Do steps 1 to 6. Go to optics mode MANUAL and proceed to step 9. Disregard R-1, R-2, and R-3. Make five marks at least 10 seconds apart and then exit the program at step 12. We will give you the gimbal angles for starting with zero optics, if you so desire.

08 13 06 11 CC Apollo 7, Houston. Opposite omni.

08 13 06 15 CDR All right.

08 13 06 22 CMP Let's see, I just select P22, use unknown landmark, go through the program to step 6 and then optics MANUAL, proceed to step 9, ignore the display, make five marks 10 seconds apart, then exit at step 12.

08 13 06 38 CC That's affirmative.

08 13 06 43 CMP Okay. I don't think we need gimbal angles for zero optics. What do you want to use - just

the sextant, or the telescope? I guess the sextant they'd prefer, huh?

08 13 06 55 CC They'd prefer the sextant, and use the upper horizon, or what you think is the upper horizon, anyhow.

08 13 07 03 CDR Yes, whatever that is.

08 13 07 05 CC Roger.

08 13 07 07 CMP Okay. We'll try it. These done in daylight, are they?

08 13 07 15 CC That's affirmative. In the daylight.

08 13 07 19 CMP Okay. I don't think we'll need any gimbal angles. Just set up for small in forward ORB rate.

08 13 07 26 CC Okay. And if it's going good and you can get it at different shaft and trunnion angles, the more data we get the better off we'll be, but don't waste any more fuel on it.

08 13 07 39 CMP Okay. What's the purpose of this anyway? I guess I don't understand what and why we're doing it.

08 13 07 44 CC Okay. The purpose is for - to get an idea on the difference between the apparent horizon and the real earth horizon for the calculations on some midcourse corrections.

08 13 07 59 CMP Yes. I understand that, but I don't understand what use it is because midcourse navigation is

done several thousand miles out from the earth and at that point, this horizon jazz doesn't mean anything. Hell, it's all I'm going to be - -

08 13 08 17 CC I see what your saying but we don't - -

08 13 08 19 CMP ... that's the only place this program applies anyway.

08 13 08 24 CC Roger. We see what you're saying but we still don't have a hack on what this difference is; we don't have any hack on what the difference is, so we'd like to get at least one data point on that.

08 13 08 35 CMP Yes, okay. We can go ahead and do it.

08 13 09 14 CC 7, Houston.

08 13 09 16 CMP Go.

08 13 09 18 CC Roger. Antigua acquisition at 21, and we'd like to have you be in P00 at that time, to send a load to you.

08 13 09 31 CMP Okay. I'm going to power up before that and try to do P51.

08 13 09 35 CC Roger.

08 13 11 03 CC Apollo 7, Houston. One minute LOS.

08 13 11 08 CDR Roger.

ANTIGUA (REV 130)

08 13 22 26 CC Apollo 7, Houston through Antigua.

08 13 23 54 CC Apollo 7, Houston through Antigua.

08 13 23 58 CMP Roger. Houston, Apollo 7.

08 13 24 01 CC Roger. We monitor P00. If you go to ACCEPT, we have a couple of loads for you.

08 13 24 06 CMP Okay.

08 13 24 08 CC And I have the maneuver PAD when you're ready to copy.

08 13 24 13 CMP Okay. Stand by.

08 13 25 47 CMP Go ahead with your up PAD data.

08 13 25 50 CC Roger. SPS number 6, minimum impulse 210 08 0000 minus 00000 plus 00154 minus 00000 2362 plus 0902 00055 24814 minus 073 minus 128 000 34 0422 124 209 20 0000 minus 2214 plus 10262 1511. Last block: roll, pitch and yaw, all balls.

08 13 27 45 CC And we have about 1 minute to LOS. I'll wait for Canary for the readback.

08 13 27 50 CMP Okay. What are you going to do about this up-link? Is it all through, or are you still doing it?

08 13 28 00 CC Do we have a VERB 33 in the DEKY, Donn?

08 13 28 03 CMP Okay. After we ... we can go on?

08 13 28 09 CC Yes. Punch and ENTER and go on.

08 13 28 12 CMP Las Vegas.

08 13 28 17 CC And, Donn, LOS is coming up. We'll get the readback at Canary.

08 13 28 23 CMP Okay, Bill. Thank you.

08 13 28 24 CC Thank you.

## CANARY (REV 130)

08 13 32 06 CC Apollo 7, Houston through Canary.

08 13 32 31 CC Apollo 7, Houston through Canary.

08 13 32 39 CMP Roger. This is Apollo 7.

08 13 32 41 CC Roger. I have one comment for the maneuver PAD before readback, and that is that maneuver is heads up, out of plane, south.

08 13 32 52 CMP Roger.

08 13 32 53 CC And standing by for readback.

08 13 32 55 CMP Stand by one.

08 13 34 36 CMP Houston, Apollo 7.

08 13 34 38 CC Roger. Go, Donn.

08 13 34 43 CMP Roger. I'm ready to read this back now.

08 13 34 45 CC Okay.

08 13 34 47 CMP Okay. SPS 6: MIN impulse 21008 0000 minus all balls plus 00154 minus all balls 6362 0902 3 balls 55 24814 minus 073 minus 129 000 34 0422 124. I guess that's 12.4 degrees trunnion angle.

08 13 35 18 CC Affirmative.

08 13 35 20 CMP 209 00 0000 minus 2214 plus 102 62 151 and all zeros for attitude. This will be heads up out of plane. Say what's the rest of your comments?

08 13 35 40 CC Heads up, out of plane, south and I'm sure you have it right but the altitude in NOUN 43 is 151.1.

08 13 35 50 CMP Oh, Roger. I thought I read that.

08 13 35 56 CC Readback is correct.

08 13 35 59 CMP Okeydoke.

08 13 36 19 CC Apollo 7, Houston. Opposite omni, please.

08 13 36 24 CMP Roger.

08 13 39 54 CC Apollo 7, Houston. Coming up 1 minute LOS  
Canary. We'll have another minute and one-  
half with Madrid if you want to turn your  
S-band volume up at 40 plus 30. Also would  
like for you to go to BLOCK on your uplink.

08 13 40 08 CMP Roger. BLOCK. Thank you.

08 13 40 10 CC Thank you.

MADRID (REV 130)

08 13 41 24 CC Apollo 7, Houston. One minute LOS Madrid;  
Honeysuckle at 17.

08 13 41 35 CMP Roger, Houston.

08 13 41 46 CC Apollo 7, Houston. We will need S-band volume  
up for Honeysuckle.

08 13 41 50 CMP Roger. I'll get it up for Honeysuckle, too.

HONEYSUCKLE (REV 130)

08 14 19 04 CC Apollo 7, Houston through Honeysuckle.

08 14 19 43 CC Apollo 7, Houston through Honeysuckle.

08 14 19 48 CMP Roger. Houston, Apollo 7.

08 14 19 50 CC Roger.

08 14 20 04 CC Houston, Apollo 7.

08 14 20 05 CC Go.

08 14 20 08      CMP      Say again.

08 14 20 10      CC       Apollo 7, Houston.

08 14 20 11      CMP      Roger.

08 14 20 15      CC       Oh, I'm sorry, Donn. I thought you were calling  
me.

08 14 20 18      CMP      Yes, I was; I was just answering.

08 14 22 41      CC       Apollo 7, Houston. One minute 30 seconds LOS  
Honeysuckle. One thing I didn't pass up on the  
maneuver PAD that they wanted mentioned was that  
it will be quad B and D ullage for burn 6.

08 14 22 57      CMP      Yes. Roger. That's what I figured on using, Bill.

08 14 22 58      CC       That's what I told them.

08 14 23 00      CMP      Okay. Thank you.

08 14 24 09      CC       Apollo 7, Houston. Coming up on LOS; Redstone  
at 36.

08 14 25 15      CMP      Roger. Bill, see you at 36.

08 14 24 18      CC       Roger.  
  
REDSTONE (REV 130)

08 14 36 56      CC       Apollo 7, Houston through Redstone.

08 14 37 02      CMP      Roger. Houston, Apollo 7.

08 14 37 06      CC       Roger. Ron has been working on this P22 pro-  
cedure, and he has a few more notes he'd like  
to give you.

08 14 37 13      CMP      Oh, okay. Just a second; I'll get my pen out.

08 14 37 23      CMP      Go ahead.

08 14 37 25 CC Okay. Donn, before you select P22 on the thing, preset your shaft to approximately zero degrees and the trunnion to approximately 10 degrees.

08 14 37 42 CMP What for?

08 14 37 44 CC Roger. What we want to do is use the landmark line of sight in the sextant there, so when you're making the mark -

08 14 37 55 CMP Wait a minute. Wait a minute now, Ron. You mean you want me to use the landmark line of sight, and you want me to fly the spacecraft and look at the horizon?

08 14 38 04 CC That's affirmative.

08 14 38 08 CMP I don't think that makes much sense, frankly. For one thing, we're going to be pitched way up if we do that, which means that we're going to be fighting this perigee torque, very likely. The other thing is it takes fuel to do that. You've got to keep maneuvering around to get it on there. You maneuver line of sight around with the spacecraft rather than maneuvering the optics with the optics controls. Can't they get the same - P22 measures optics angles as well as IMU gimbal angles. That's what it's for. I don't see why we can't use the - if we're going to use P22, why don't we use the sextant line of sight rather than the landmark line of sight.

08 14 38 50      CMP      If we use the ... line of sight, we can hold local horizontal attitude; with it pitched up 15 degrees or so, it will work out fine, but if you go pitch up 50 degrees to put that line of sight on it, that's going to be a horse of a different color.

08 14 39 07      CC      Okay. I understand your concern, Donn, but what we want to do is get a hack when looking through this landmark line of sight at the horizon. It looks different than it does through the star line of sight on the sextant.

08 14 39 24      CMP      Oh, I see. Okay, all right. We'll give it a whirl.

08 14 39 29      CC      Roger.

08 14 39 33      CMP      That takes a little more than "gee whiz" data anyway because that horizon doesn't look anything like that when you're 10 000 miles away.

08 14 40 53      CC      Apollo 7, Houston.

08 14 40 58      CMP      Roger.

08 14 40 59      CC      Roger. To add a little food to what I said before on why we want it in this mission at a close distance: if we can get a better feel for what this DELTA-H of the horizon is, we get a better feel closer than we would at say 10 000 miles out.

08 14 41 19      CMP      Roger. I can tell you what it is. It's 2.8 degrees; we measured it.

08 14 41 25 CC Okay.

08 14 41 26 CMP No, we did. We measured it in the COAS; we measured it in the telescope. Wally's measured it in Mercury and Gemini flights, and it's - well 2.8 plus or minus a couple ... depending on where the sun is and the lighting conditions and maybe even what you're looking at it with, I don't know.

08 14 41 56 CC Roger. I think the only difference we might have in there is that we're looking at it through the diachromatic filter on that landmark line of sight now.

08 14 42 10 CMP Yes, that could change it a little; I don't know, make it look orange.

08 14 42 13 CC Roger.

08 14 42 31 CC 7, Houston. What you last said there is the object of the whole thing, really. We just want to get an idea of what it looks like - what you think the top of the horizon is through that orange-looking filter.

08 14 42 52 CMP Well, we did that the other day, you know. That's why I gave up on making those starmarks. There just wasn't anything there that you could say was a firm line to make a mark on. It was all fuzzy and amorphous and like that.

08 14 43 12 CC We see what you're saying, really.

08 14 43 40 CC Donn, new subject. My errand was completed this afternoon.

08 14 43 47 CMP Roger. Thank you.

08 14 43 49 CC Roger.

08 14 43 52 CMP What sort of response did you get?

08 14 43 56 CC The right kind, the good kind.

08 14 44 00 CMP Very good.

08 14 44 04 CC And we'll see you tomorrow evening.

08 14 44 07 CC Okay, Ron. Good night.

08 14 44 10 CC Roger.

08 14 44 19 CC Apollo 7, Houston. Opposite omni.

08 14 44 22 CMP Roger.

08 14 44 32 CC Apollo 7, Houston. Switch omni again, please.

08 14 45 37 CMP Roger.

08 14 46 23 CC Apollo 7, Houston. One minute LOS Redstone; Antigua at 55.

08 14 47 02 CC Apollo 7, Houston. Coming up on LOS Redstone; Antigua at 55.

08 14 47 10 CMP Roger.

ANTIGUA through BERMUDA (REV 131)

08 14 56 46 CC Apollo 7, Houston through Antigua.

08 15 04 16 CC Apollo 7, Houston. Coming up on Antigua LOS in about 1 minute; at Canaries at 07.

08 15 04 27 CMP Roger, Bill.

08 15 04 39 CC Donn, I have one question. Do you have the number 1 set of EMAG's powered?

08 15 04 45 CMP Negative. I do not.

08 15 04 46 CC Thank you.

08 15 04 50 CMP Bill, I've got about half the SCS system powered up here.

08 15 04 54 CC Thank you.

CANARIES (REV 131)

08 15 07 57 CC Apollo 7, Houston through Canaries.

08 15 08 02 LMP Roger, Bill. Good morning.

08 15 08 03 CC Good morning. How are you today? Just wanted to re-confirm that you understand that the LMP and the CDR may remove BIOMED harnesses.

08 15 08 17 LMP Roger. We've got that word.

08 15 08 20 CC Okay. Thank you.

08 15 08 22 LMP Do you mean we can remove them right now?

06 15 08 23 CC Affirmative.

08 15 08 25 LMP I see; okay.

08 15 08 34 CDR Aren't you all very clever?

08 15 08 37 CC Thought you'd like that.

08 15 08 39 CDR I do. It doesn't bother us much one way or the other, but the real point is that I think somebody has probably caught on to the fact that they're not very good equipment.

08 15 15 34 CC Apollo 7, Houston. About 1 minute from LOS Canary. S-band volume up at 16 for approximately 2 more minutes of S-band.

08 15 15 48 LMP Roger, Bill.

08 15 15 50 CC And we'd like to confirm that you have a - have  
an update for fuel cell O<sub>2</sub> purge at 207 plus 20.

08 15 16 00 CMP Roger. We've got that there on the flight plan.

08 15 16 03 CC Thank you.  
MADRID (REV 131)

08 15 16 58 CC Apollo 7, Houston. One minute LOS Madrid;  
Carnarvon at 43.  
CARNARVON (REV 131)

08 15 44 10 CC Apollo 7, Houston through Carnarvon. Standing  
by.

08 15 45 51 CC Apollo 7, Houston. Opposite omni, please.

08 15 45 58 CMP Roger, Bill.

08 15 46 01 CC Thank you.

08 15 48 33 LMP Houston, Apollo 7. Can we get a chart update,  
please?

08 15 48 36 CC Roger. Stand by.

08 15 48 44 CC Apollo 7, Houston. Chart update, REV 132  
209 plus 53 plus 55 130.3 west.

08 15 49 11 LMP Roger.

08 15 50 19 CC Apollo 7, Houston. One minute LOS Carnarvon.  
S-band up for Honeysuckle at 52.

08 15 50 30 CDR Roger.  
HONEYSUCKLE (REV 131)

08 15 57 13 CC Apollo 7, Houston. We still have about 3 min-  
utes to go. Sounds like we're coming into a  
keyhole. Redstone at 13.

08 15 57 22 LMP Roger, Bill.

08 15 57 45 CC Apollo 7, Houston. Opposite omni, please.  
REDSTONE (REV 131)

08 16 13 41 CC Apollo 7, Houston through Redstone.

08 16 13 59 LMP ... , Bill?

08 16 14 00 CC Go.

08 16 14 04 CC Apollo 7, Houston. Go.

08 16 14 17 CC Apollo 7, Houston. I read you. Go.

08 16 14 22 LMP Roger.

08 16 16 07 LMP Houston, Apollo 7.

08 16 16 09 CC Apollo 7, Houston. Go.

08 16 16 11 LMP Roger. You're getting the readouts off our  
DSKY down there, aren't you?

08 16 16 14 CC Affirmative.

08 16 16 16 LMP Okay. Thank you.

08 16 16 19 CDR I blew it, Bill. I had 34 balls, and I thought  
I got 34 balls 1 here.

08 16 16 26 CC I've been watching that. They've been looking  
good.

08 16 20 06 CC Apollo 7, Houston. One minute LOS Redstone;  
Texas at 28.  
TEXAS through BERMUDA (REV 132)

08 16 27 39 CC Apollo 7, Houston through Texas.

08 16 27 44 LMP Good morning, Texas.

08 16 27 47 CC Good morning. And I have an update for the  
second passive thermal control test.

08 16 27 55 LMP Wait one.

08 16 29 33 LMP Roger. Go ahead, Bill. What do you have on the passive thermal control?

08 16 29 36 CC Right. I have the update for times and attitude.

08 16 29 41 LMP Go ahead.

08 16 29 42 CC Right. T 0212 plus 05, T align 212 plus 31, attitude is roll zero, pitch zero, yaw zero. I also have some changes to the procedure.

08 16 30 07 LMP Roger. Did you give me the T zero first?

08 16 30 09 CC T zero 212 plus zero 5.

08 16 30 18 LMP Zero 212 plus zero 5, 212 plus 31, roll zero, pitch zero, yaw zero. Change your procedure?

08 16 30 25 CC Right. At T plus 5, make it read set up pitch rate, et cetera.

08 16 30 38 LMP Pitch rate of 0.3.

08 16 30 39 CC Right. And then just below LER, where it says P and Y attitude hold, make that read R and Y attitude hold.

08 16 30 58 LMP Roll and yaw attitude hold, pitch attitude reads 0.3 degrees per second. Go on.

08 16 31 02 CC Right. At T plus 26, confirm right - that's correct, pitch rate 0.3 degrees per second, et cetera. And make it disable R and Y, roll and yaw.

08 16 31 22 LMP Okay.

08 16 31 23 CC And the second line from the bottom there, from Y-axis orientation, et cetera.

08 16 31 40 CC And just as a reminder, don't key in the T align time until within 90 minutes of start test.

08 16 33 29 CC Apollo 7, this is Houston. You're GO for 150 dash 1.

08 16 33 35 LMP Roger. Thank you. That's the next to last one, isn't it?

08 16 33 39 CC Just about. And I passed up - I said don't key in T align time till within 90 minutes of start test. That was wrong. It should have been don't key in T align time till within 90 minutes of T align time.

08 16 33 54 LMP Roger. That's the way I took it.

08 16 33 55 CC Okay.

08 16 40 15 CC Apollo 7, Houston. One minute LOS Bermuda. Canaries at 44.

08 16 40 22 CDR Roger, Bill.

CANARY (REV 132)

08 16 44 04 CC Apollo 7, Houston through Canary. Standing by.

08 16 44 08 CDR Roger. Bill, would you work up the man hours that were flown on Gemini 7?

08 16 44 17 CC Stand by.

08 16 44 19 CDR We passed Gemini V on time; we're waiting to pass Gemini VII on man hours.

08 16 44 26 CC Oh, I see what - okay.

08 16 47 16 CC Apollo 7, Houston.

08 16 47 20 CDR Go ahead, Bill.

○ 08 16 47 21 CC Right. Gemini VII: 661.2 hours. You are coming up on 627 in about 13 minutes.

08 16 47 35 CDR Roger.

08 16 47 36 CC Also, we would like the SPS line heaters to A; we have an engine valve temp around 50 degrees; we'd like to warm that up a little bit. And you can turn that back off whenever the inlet temperature reaches 75 degrees, or in any event turn it OFF before the burn.

08 16 48 06 LMP Okay. I have an SPS propellant tank temperature here which is not a very apt description, maybe, of the main one. Should I turn it off when my measurement shows 75?

⊖ 08 16 48 19 CC That is affirmative. But stand by for a check on that.

08 16 48 25 LMP Okay. I'm turning the heaters ON now.

08 16 48 27 CC Right.

08 16 48 42 CC Apollo 7, Houston. That is affirmative. When the propellant tank temperature reaches 75 degrees.

08 16 50 36 CC Apollo 7, Houston. One minute LOS Canary; Carnarven at 18.

○ 08 16 50 44 CDR Roger. We got a real thrill, we saw a contrail - oh, about 100 miles long right over the Canary Islands. We didn't get a chance to get a picture, though.

08 16 50 54 CC Roger. Contrail.

08 16 50 56 CDR Roger. It was really a long one.

08 16 51 02 CDR We just don't have that kind of film anymore.

08 16 51 04 CC Right. Too bad.

CARNARVON (REV 132)

08 17 18 37 CC Apollo 7, Houston through Carnarvon.

08 17 18 42 CDR Roger.

08 17 18 49 CC Apollo 7, Houston. I'll give you a time hack  
on 209 plus 19 coming up in 5 seconds.

08 17 19 00 CC MARK.

08 17 19 01 CC 209 plus 19.

08 17 19 10 CDR ...

08 17 19 15 CC Roger. I'll give you a MARK on 209 plus 20.

08 17 19 20 CDR Roger. ... okay.

08 17 19 30 CDR We'll try to work those into the Mercury block,  
Bill.

08 17 19 44 CC I'm having difficulty copying. I'll - -

08 17 19 50 CC Ten, five, four, three, two, one.

08 17 20 00 CC MARK.

08 17 20 03 CC 20 - -

08 17 20 04 CDR Watch my DSKY, babe.

08 17 20 08 CC Right. Thank you.

08 17 20 10 CDR I was ... when you hit it. That's pretty tight,  
isn't it? My remark was you should have played  
with those Mercury range clocks if you want the  
fun.

08 17 20 20 CC Right.

08 17 22 58 CDR Hello, down there, Carnarvon. You look good today.

08 17 26 50 C7 Apollo 7, Houston. One minute LOS Carnarvon. S-band volume up in 1 minute for Honeysuckle.

08 17 26 57 CDR Okay.  
HONEYSUCKLE (REV 132)

08 17 35 22 CC Apollo 7, Houston. One minute LOS Honeysuckle; Guaymas at 58.

08 17 35 30 CDR Roger.  
GUAYMAS through BERMUDA (REV 132)

08 17 58 33 CC Apollo 7, Houston through Guaymas.

08 17 58 58 CDR Loud and clear.

08 17 59 02 CC Roger. Apollo 7, Houston. You can confirm SPS line heaters OFF.

08 17 59 10 LMP They're coming OFF at the 5 minute and 30 second checklist.

08 17 59 13 CC Roger. Thank you.

08 17 59 16 LMP Have you noticed anything to be accomplished out of line heaters on board? I'm reading exactly the same temperature on mine - my heaters.

08 17 59 26 CC Yes, we did show an increase at Carnarvon on your valve TEMP.

08 17 59 32 LMP Okay. I'd like to leave a request. We may not be able to get it on your watch. I'd like to

find out how much water we burned yesterday on the secondary coolant loop test.

08 17 59 41 CC Okay. We're checking on it.

08 18 01 52 CC Apollo 7, Houston. Are you trying to call?

08 18 01 55 LMP Negative.

08 18 01 56 CC Fine.

08 18 02 16 CC Apollo 7, Houston. Confirm omni A.

08 18 02 20 LMP That's affirmative.

08 18 02 22 CC Thank you.

08 18 02 24 LMP Looks like another one might be better.

08 18 02 29 LMP All SCS circuit breakers CLOSED.

08 18 02 35 LMP Gimbal motor control, four CLOSED.

08 18 02 41 LMP Direct RCS OFF.

08 18 02 44 CMP Direct RCS OFF.

08 18 02 46 LMP One roll channel ENABLED.

08 18 02 47 CMP One roll channel B and D ENABLED.

08 18 02 50 LMP EMAGS to RATE 2.

08 18 02 51 CMP EMAGS to RATE 2.

08 18 02 52 LMP Spacecraft control, CMC AUTO.

08 18 02 55 CMP CMC AUTO.

08 18 02 56 LMP SCS TV pulse RATE COMMAND.

08 18 02 58 CMP RATE COMMAND.

08 18 03 00 LMP TVC gimbal drive, pitch and yaw, AUTO.

08 18 03 02 CMP AUTO.

08 18 03 03 LMP TVC SERVO power, one and two ON.

08 18 03 05 CMP One and two ON.

08 18 03 06 LMP Handcontroller power to ONE.  
08 18 03 09 CMP Handcontroller power to ONE.  
08 18 03 10 LMP Handcontroller two ARMED, stand by for main  
bus tie.  
08 18 03 14 CMP Check.  
08 18 03 22 LMP Bus ties ON. Gimbal motor pitch one, yaw one.  
08 18 03 25 LMP Pitch one, START.  
08 18 03 27 CMP ON.  
08 18 03 29 LMP Gimbal one, START.  
08 18 03 31 CMP ON.  
08 18 03 33 LMP Translation handcontroller clockwise.  
08 18 03 36 CMP Clockwise.  
08 18 03 37 LMP Verify no MFVC.  
08 18 03 41 CMP No MFVC.  
08 18 03 42 LMP Pitch two, yaw two.  
08 18 03 43 CMP Pitch two, START.  
08 18 03 46 LMP ON.  
08 18 03 47 CMP Yaw two, START.  
08 18 03 48 LMP ON.  
08 18 03 50 LMP Confirm and set GTI trim.  
08 18 04 09 CMP GTI set.  
  
GUAYMAS through BERMUDA (REV 133)  
08 18 04 14 LMP Verify MFVC.  
08 18 04 16 CMP Roger. MFVC verified.  
08 18 04 18 LMP Translation handcontroller NEUTRAL.  
08 18 04 21 CMP NEUTRAL.

08 18 04 22 IMP Handcontroller power to BOTH.  
08 18 04 25 CMP BOTH.  
08 18 04 26 LMP Do your trim maneuver.  
08 18 04 27 CMP Roger.  
08 18 04 34 LMP Direct RCS ON.  
08 18 04 46 LMP Direct RCS ON.  
08 18 04 50 CMP Roger. Direct RCS is ON.  
08 18 04 52 IMP Manual attitude RATE COMMAND.  
08 18 04 53 CMP RATE COMMAND.  
08 18 04 54 LMP BMAG ATT-1/RATE 2.  
08 18 04 57 CMP ATT-1/RATE 2.  
08 18 04 59 IMP Standing by for 2 minutes.  
08 18 05 00 CMP Roger.  
08 18 05 02 CDR Trim maneuvers, GO.  
08 18 05 18 LMP Do I need another GDC align?  
08 18 05 28 LMP If we do, now is the time to do it.  
08 18 06 00 CC Two minutes.  
08 18 06 01 CDR Two minutes.  
08 18 06 02 LMP FDAI scale five-five.  
08 18 06 07 CMP Five and five.  
08 18 06 08 LMP DELTA-V thrust A and B NORMAL.  
08 18 06 11 CMP A and B NORMAL.  
08 18 06 12 LMP Handcontrollers ARMED.  
08 18 06 14 CMP Handcontrollers ARMED.  
08 18 06 16 LMP Standing by for 30 seconds.  
08 18 06 18 CMP Roger.

08 18 07 29 LMP Okay. EMS to DELTA-V in AUTO.

08 18 07 31 CDR DELTA-V AUTO 30 seconds.

08 18 07 33 LMP Two-jet ullage in 20 seconds.

08 18 07 34 CMP Roger.

08 18 07 41 CMP Twenty seconds.

08 18 07 43 LMP Jet ullage now.

08 18 07 50 CC Ten, five, four, three, two, one.

08 18 08 00 CC Ignition.

08 18 08 21 LMP Roger. Burn complete DELTA-V thrust A and B  
OFF. Spacecraft control SCS.

08 18 08 36 CDR Do you read the residuals, ground?

08 18 08 40 CC Roger. I have them.

08 18 08 42 CDR Roger.

08 18 08 45 LMP Circuit breakers gimbal motor control, four  
OPEN.

08 18 09 05 CDR Gimbal motor control circuit breakers OPEN.

08 18 09 09 CMP TV servo power one and two OFF.

08 18 09 11 LMP Direct RCS OFF.

08 18 09 13 CMP Direct RCS OFF.

08 18 09 14 LMP Main bus ties are already OFF.

08 18 09 16 CMP EMS mode - OFF. Stand by reading residuals.

08 18 09 21 LMP Roger. I got minus 12.8 on the DELTA-V counter.  
No chance to make it now.

08 18 09 31 CC Donn, what'd you have to start with? What did  
you have set in?

08 18 09 34 CMP 5.5.

0 08 18 09 36 CC Thank you.

08 18 09 40 CDR That's almost a space first. We did it without hearing you, cats.

08 18 09 45 CMP Can we go back to bed now?

08 18 09 47 CMP (Snoring)

08 18 09 48 CDR Hope you all weren't scared down there.

08 18 09 51 CC We were watching.

08 18 09 54 CDR Don't you feel like you're kinda left out?

08 18 10 00 CC We saw it all.

08 18 10 02 CDR Okay.

08 18 10 49 CC Apollo 7, Houston.

08 18 10 52 LMP Go ahead, Bill. Roger.

08 18 10 53 CC I have a block data PAD here, back to the mundane things, when you're ready to copy.

08 18 11 21 LMP Ready to copy.

08 18 11 22 CC Roger. Block data: 135 dash 1 Alfa plus 266 minus 0630 213 00 32 2817, 136 dash 4 Alfa plus 279 minus 1618 215 38 45 3689, 137 dash 4 Bravo plus 302 minus 1620 217 17 27 3168, 138 dash 4 Alfa plus 280 minus 1617 218 57 54 2840, 139 dash 4 Bravo plus 217 minus 1640 220 39 03 2969, 140 dash Alfa Charlie minus 250 minus 0050 221.

08 18 13 44 LMP Readback follows: 135 dash 1 Alfa plus 266 minus 0630 213 plus 00 plus 32 2817, 136 dash 4 Alfa plus 279 minus 1618 215 plus 38 plus 45 3689, 137 dash 4 Baker plus 302 minus 1620

217 plus 17 plus 27 3168, 138 dash 4 Alfa plus 280 minus 161.7 218 plus 57 plus 54 2840, 139 dash 4 Baker plus 217 minus 1640 220 plus 39 plus 03 2969, 140 dash Alfa Charlie minus 250 minus 0050 221 plus 19 plus 06 7392. Over.

08 18 14 46 CC Readback is correct.  
08 18 15 39 CC Apollo 7, Houston. One minute to LOS Bermuda; Canary at 19.

CANARY (REV 133)

08 18 19 53 CC Apollo 7, Houston through Canary.  
08 18 19 57 CDR Roger, Bill.  
08 18 20 00 CDR What happened to your COMM down there this morning?  
08 18 20 04 CC Say again?  
08 18 20 07 CDR What happened to your COMM? We missed your 2-minute and 1-minute check.  
08 18 20 11 CC Well, I gave you a 2 minute and I waited - I didn't say anything at 1 minute. We said we were going to stay a bit more quiet on this burn for you.  
08 18 20 20 CDR Okay. I don't think we read your 2 minute. Of course, we may have overridden you because you were broadcasting. There was some background noise activity just about that time that was very strong.

08 18 20 39 CC Yes, it must have been us. I've also been having some trouble keying.

08 18 20 45 CDR Yes, it sounded like somebody was keying. It was open on the key. That's why I'm trying to bring the point up for you. That will give the COM TECH something to do.

08 18 20 54 CC Roger.

08 18 21 05 CDR Bill, do you have apogee and perigee for us after that, yet?

08 18 21 08 CC Stand by.

08 18 21 16 CC We're reading some tracking right now. We'll give you the results shortly.

08 18 21 21 CDR Okay.

08 18 21 48 CDR Bill, this is Wally.

08 18 21 50 CC Go.

08 18 21 52 CDR Roger. Someone is keying in on us.

08 18 21 57 CC Say someone is keying in on you?

08 18 21 59 CDR That's right. Very slowly. I'd like to give you a statement for the day.

08 18 22 04 CC Right.

08 18 22 05 CDR We do not require a static fire on the SPS engine for 101.

08 18 22 11 CC Right. Copied.

08 18 22 12 CDR At this time.

08 18 22 14 CC Roger.

08 18 22 28 CDR I might add that I'm also glad to be in the position of having the ability to avoid saying I told you so on this one.

08 18 22 36 CC Amen to that. And have your orbit now. 90.3 by 236.2.

08 18 22 49 CDR Roger.

08 18 22 56 CDR 263.2, huh? Was that 236.2, Bill?

08 18 23 01 CC Affirmative. 236.2.

08 18 23 09 CDR Okay. Our first cut onboard, just to compare the two was 234.7 and 88.2.

08 18 23 20 CC Roger. 234.7 and 88.2.

08 18 23 24 CDR Right. Guess we'll have to compare the two as best we can.

08 18 23 28 CC Roger.

08 18 24 40 CDR Houston, Apollo 7.

08 18 24 41 CC Apollo 7, Houston. Go.

08 18 24 44 CDR Roger. We had the TV camera OFF that time, not running, and it came out of the bracket.

08 18 24 50 CC Roger. Understand.

08 18 24 52 CDR In my lap. Didn't hurt anything, just got caught on my leg.

08 18 24 57 CC And you did have it in the bracket?

08 18 24 59 CDR That's right, the tunnel hatch bracket.

08 18 25 03 CC Right.

08 18 25 07 CDR The other thing that I don't think we've ever made note of is that all of our burns have been

O

conducted with the couch in the dock position -  
no problem.

08 18 25 19

CC

Understand.

08 18 25 23

CDR

We'll make the retroburn with the couch in the  
boost position.

08 18 25 27

CC

Roger.

08 18 25 46

CC

Apollo 7, Houston. One minute LOS Canary;  
Tananarive at 40.

08 18 25 53

CDR

Roger.

TANANARIVE (REV 133)

08 18 41 24

CC

Apollo 7, Houston through Tananarive.

08 18 44 37

CC

Apollo 7, Houston. One minute LOS Tananarive;  
Carnarvon at 54.

CARNARVON (REV 133)

08 18 54 12

CC

Apollo 7, Houston through Carnarvon.

08 18 54 15

LMP

Roger. Loud and clear.

08 18 54 28

CC

And, Walt, I have the water consumption during  
the secondary loop test yesterday as being ap-  
proximately 5 to 8 pounds. Some uncertainty  
because there was an eat period at that time.

08 18 54 43

LMP

Because there was a what period?

08 18 54 46

CC

An eat period.

08 18 54 48

LMP

An eat period. Okay.

08 18 54 54

LMP

You can tell them that they can count on what-  
ever reconstitutables were in that meal; we used  
the water that went with them.

⊖

○

08 18 55 02 CC Roger.

08 18 55 21 LMP Hey, Bill, log me eight clicks from the water gun.

08 18 55 25 CC Roger.

08 18 55 26 LMP Might make a note that I think yesterday I reported that the water pistol trigger action is becoming very, very stiff and we're taking some of our drinking water and putting it in an empty bag out of the spout down there and the cold water spout seems to be getting a little stiff, too. The hot water spout still works nice and smooth.

08 18 55 46 CC Roger. Understand. Copied.

08 19 03 05 CC Apollo 7, Houston. One minute LOS Carnarvon. S-band volume up in 1 minute for Honeysuckle.  
HONEYSUCKLL (REV 133)

08 19 04 49 CC Apollo 7, Houston through Honeysuckle.

08 19 05 41 CC Apollo 7, Houston through Honeysuckle.  
HUNTSVILLE (REV 133)

08 19 27 23 CT Huntsville AOS.

08 19 27 46 CC Apollo 7, Houston through Huntsville.

08 19 27 51 CDR Roger, Bill.

08 19 27 53 CC And we'd like the O<sub>2</sub> tank 2 fans ON 3 minutes and then OFF.

08 19 28 00 CDR Roger. ...

08 19 28 37 CT Houston, Huntsville cannot lock, downlink too low.

08 19 28 56 CC Apollo 7, Houston. Would you say again last?

08 19 29 02 CDR Roger. ...

08 19 29 33 LMP Hey, Bill, we've got the SPS line heaters OFF and are leaving them OFF now.

08 19 29 39 CC Okay. Roger.

08 19 32 34 CT Huntsville LOS.  
GUAYMAS (REV 133)

08 19 35 38 CC Apollo 7, Houston. How do you read?

08 19 35 42 LMP Loud and clear.

08 19 35 44 CC Roger. I was having difficulty reading you at Huntsville. I read you to say line heaters were OFF and that you were leaving them OFF. Was that correct?

08 19 35 59 LMP No, the line heaters are OFF. We're leaving them OFF, and we also turned the fans OFF on the O<sub>2</sub> tank 2.

08 19 36 05 CC Roger. Did you cycle them?

08 19 36 07 LMP Sure did.

08 19 36 08 CC Roger. Thank you.

08 19 38 46 CC Apollo 7, Houston.

08 19 38 48 CDR Go ahead.

08 19 38 49 CC I have some information here on landmark tracking that might be helpful. If you desire to get your landmark maps in order, the following landmarks will be on track for the first landmark exercise. I'll stand by until you're ready to copy.

08 19 39 09 LMP Okay, Bill. Roger. You just going to read off the numbers, right?

08 19 39 14 CC Affirmative.

08 19 39 16 CMP Okay. Go ahead with the numbers.

08 19 39 19 CC 20, 48, 71, 225. That's it. Note: we will have landmark update for you at 212 plus 30. An additional note for clarification, also, landmark 48 is on the page for landmark 40 in your map set.

08 19 39 54 LMP Okay. Thank you.

08 19 39 56 CC Roger.

GUAYMAS through ANTIGUA (REV 134)

08 19 40 03 LMP You got any idea of the weather along these marks, Bill? Are they all clear?

08 19 40 07 CC Stand by. That's a good question.

08 19 40 58 CC Apollo 7, Houston. I have the weather on those landmarks.

08 19 41 03 LMP Go ahead, Bill.

08 19 41 05 CC Roger. For landmark 20, the coverage is four-tenths, for landmark 48, coverage is two-tenths; 71, three-tenths; 225 is one-tenth.

08 19 41 22 LMP Roger. Thank you.

08 19 46 11 CDR Houston, Apollo 7.

08 19 46 15 CC Apollo 7, Houston.

08 19 46 17 CDR Looks like you got me set up for about the maximum perigee torque I can get.

08 19 46 28 CC Stand by.

08 19 46 30 CDR Yes, we'll go ahead with it - I think we've got plenty of fuel. No problems.

08 19 46 34 CC Okay. We'll check.

08 19 46 38 CDR I'm going to try to give this thing the most torque I could in perigee. This is the way I planned. That's BEF about 60 degrees off.

08 19 47 28 CC Apollo 7, Houston.

08 19 47 30 CDR Roger.

08 19 47 31 CC Roger. This is the same thing that we had last night. Donn questioned us on it, and it was a good question then and it is now, and the answer is that we realize what you're saying is true, but in order to get the test performed above 200 miles, we have to start it low like this.

08 19 47 50 CDR Roger. It's amazing that the ... of people can figure it out up here and those computers can't.  
...

08 19 48 03 CC Okay.

08 19 48 15 CDR If you get a chance, get some more data on this perigee torque.

08 19 48 20 CC Roger.

CANARY (REV 134)

08 19 57 19 CC Apollo 7, Houston through Canary.

08 19 57 24 LMP Roger.

08 19 57 26 CC Say, Donn, I have a little tweak on that P22 horizon sighting procedure.

08 19 57 34 LMP Okay. Go ahead.

08 19 57 36 CC Roger. We want to get TM and during this procedure and the procedure has been modified as follows: One, do the test over Ascension on the next pass. That will be at approximately 213 plus 37 and wait for call from ground before starting. We want TM lockup for data, and this is a low elevation pass. Two - and this is a change from the previous procedure - go through P22 twice making two marks approximately 5 seconds between marks. Before going through P22 the second time, wait for a GO from ground. Again, we want to insure that we have a TM lockup.

08 19 58 55 LMP Okay. You want this TM at 213 plus 37?

08 19 58 59 CC Affirmative.

08 19 59 00 LMP Do you want me to wait for you to confirm that you have a lockup, is that correct?

08 19 59 03 CC Affirmative.

08 19 59 05 LMP And you want to go through twice, and you want to do marks 5 seconds apart.

08 19 59 11 CC Two marks. That's right. But we only need two marks each time.

08 19 59 24 LMP Oh, just two marks, right?

08 19 59 26 CC Affirmative.

## TANANARIVE (REV 134)

08 20 15 19 CC Apollo 7, Houston through Tananarive.  
08 20 22 07 CC Apollo 7, Houston. One minute LOS Tananarive;  
Carnarvon at 29.

## CARNARVON (REV 134)

08 20 29 47 CC Apollo 7, Houston through Carnarvon.  
08 20 29 51 CDR Roger. I wish you would find out the idiot's  
name who thought up this test. I want to find  
out, and I want to talk to him personally when  
I get back down.  
08 20 30 02 CC Roger, Wally. Good morning.  
08 20 30 05 CDR Good morning.  
08 20 30 07 CDR Where is Jack? They told me I was out about  
20 pounds of fuel to get this attitude right  
now.  
08 20 30 14 CC Roger.  
08 20 30 15 CMP While you are at it, find out who dreamed up  
P22 horizon test; that is a beauty also.  
08 20 30 20 CC Okay, Donn.  
08 20 30 25 CMP I understand the objectives, and I understand the  
reason, but I just don't understand all the  
changes and so forth at the last minute. I  
think it's rather ill prepared and hastily  
conceived.  
08 20 30 36 CC Roger.

08 20 30 36 CDR I'm sitting just watching roll beat back and forth plus two-tenths of a degree per second. I have got to do better than that.

08 20 30 46 CMP Jack, I need one question answered on this landmark jazz, too. I guess the idea is to put the sixth landmark on the horizon. Now what do you want me to do with the line of sight on the right, with the movable one? Do I make it the zero optics, or do you want me to run it off so that we are looking only through the sixth line of sight with a filter in it?

08 20 31 10 CC Okay. Donn, I will get you an answer.

08 20 31 13 CMP Okay.

08 20 31 14 CDR Other than that, we are real happy this morning.

08 20 31 22 CC Navy won, and so did Ohio State.

08 20 31 25 CDR How did Stanford do, by the way?

08 20 31 28 CC Just a minute; I'll get it for you.

08 20 33 34 CC Apollo 7, Houston.

08 20 33 36 CDR Go ahead.

08 20 33 39 CC Roger.

08 20 33 40 CDR Go ahead, Jack.

08 20 33 41 CC Okay. In answer to Donn's question on the landmark line of sight on the horizon: you can move the star line of sight away from the horizon to get rid of the earth's albedo effect.

08 20 33 56 CMP Okay. I see.

○ 08 20 33 58 CC And, Wally, you - the answer to your question: Stanford and Washington played to a 21-21 tie.

08 20 34 07 CDR Very good, or very bad, just depending.

08 20 34 17 CDR Thank you.

08 20 34 18 CC Roger.

08 20 34 25 CDR We have a feeling you are believing that some of these experimenters are holier than God down there. We are a heck of a lot closer to Him right now.

08 20 34 39 CC Roger. (Chuckle)

08 20 34 49 CDR What we just did was spend 26 minutes getting to a very precise attitude, then high pick and right through perigee.

⊖ 08 20 35 01 CC Roger. Copy, Wally.

08 20 35 03 CDR Pulses started just about 4 minutes ago when it appeared.

08 20 35 14 CDR Can't even get a roll to get it down.

08 20 35 22 CC Could we have opposite omni, 7?

08 20 35 24 CDR Roger.

08 20 37 50 CC Apollo 7, Houston.

08 20 37 53 CMP Go.

○ 08 20 37 54 CC Okay. We are close to losing you here at Carnarvon; we do have Honeysuckle. Do you want to turn your S-band up? Over Hawaii, we are going to send you a state vector update, and I've got the lunar - I mean this landmark tracking pass for you.



08 20 42 21 CC Okay. Donn, that's so close to the other two that we thought we'd rather not do it. I can give you the data. It's only 4 minutes before landmark 48, so we kind of thought that was too close for you.

08 20 42 38 CMP Well, give me the data anyway.

08 20 42 40 CC Okay. Landmark 20 is 51 miles north of ground track. It's 214 plus 51 on the GET; shaft 329, trunnion 032.

08 20 43 08 CMP Say again the landmark 225. How far north or south?

08 20 43 13 CC Landmark 225 is 44 miles north of ground track.

08 20 43 21 CMP Okay.

08 20 43 23 CC And, Donn, landmark 20 is about four-tenths covered. That's about the worst of all of them.

08 20 43 30 CMP Okay.

08 20 43 47 CDR He should know where 20 is by now.

08 20 43 54 CC Say again, Donn.

08 20 43 56 CDR I said Donn should know where 20 is, at least.

08 20 43 59 CC We're about 2 minutes LOS Honeysuckle; we'll pick you up in Hawaii at 56.

08 20 44 08 CDR Okay.

HAWAII through BERMUDA (REV 134)

08 20 56 45 CC Apollo 7, Houston through Hawaii.

0 08 20 56 56 CDR I finished the so-called pitch pony test, and I think you might take note of the fuel we have left after that caper. I wish you would log that.

08 20 57 10 CC Okay. Wally, I'm going to be coming back with you. It's a real good hack on your fuel usage. We've really been watching that closely.

08 20 57 18 CDR We've got the fuel to burn, but that's a hell of a way to burn it up.

08 20 57 21 CC I agree.

08 20 57 50 CC Okay. Wally, right now we show that you've used 13 pounds in the PTC test, which is right on what we expected, and -

⊖ 08 20 58 03 CDR We could cut that to about 4 pounds, I bet.

08 20 58 07 CC Could you go to P00 and ACCEPT, and we'll send up this state vector? And I have the NAV check whenever you're ready.

08 20 59 08 CDR Go ahead, Jack.

08 20 59 11 CC Okay. 214 plus 20 plus all balls minus 0921 plus 14534 2341.

08 20 59 34 IMP Roger. Could you read it to me again, please?

08 20 59 36 CC Roger. 214 plus 20 plus all balls minus 0921 plus 14534 2341.

08 21 00 16 IMP Jack, I'm sorry. Would you give it to me one more time?

○

08 21 00 19 CC Okay. 214 plus 20 plus all balls minus 0921 plus 14534 2341.

08 21 00 52 IMP Roger. 214 20 0000 minus 0921 plus 14534 2341.

08 21 01 02 CC You got it.

08 21 01 13 CDR Hey, Jack, what day - what meal are we supposed to be eating around noon?

08 21 01 22 CC You want to know what your eat period is?

08 21 01 26 CDR No, what meal I'm supposed to eat next.

08 21 01 29 CC Okay. Stand by.

08 21 01 31 CDR I think we've got a minor crisis.

08 21 01 33 CC Roger.

08 21 01 40 CC Apollo 7, the computer is yours.

08 21 03 06 IMP GO on the NAV check.

08 21 03 10 CC Okay. Copy that.

08 21 03 12 CDR We have a feeling that the dietician thought we were on a 10.8 day flight which means like 11 working days. The flight plan, however, has 12 working days. It looks like we're one day short on chow.

08 21 03 27 CC Okay. Wally, we're just coming up - we're 3 hours short of starting our tenth day, so this would be meal C on the ninth day, or meal A on the tenth day.

08 21 03 40 CDR Roger. It's meal B. Like everybody else, we eat three meals a working day.

08 21 03 48 CC Roger.

08 21 10 17 CC Go ahead, Apollo 7.

08 21 12 42 CC Apollo 7, a picture's coming through.

08 21 12 48 CDR Roger.

08 21 12 50 LMP We have ALC in on that right now.

08 21 12 54 CC Okay. Looks good.

08 21 12 56 LMP Out. We have it out. Well, one way or the other, anyway.

08 21 13 08 LMP If you don't like it, we can change the ALC.

08 21 13 10 CC Okay.

08 21 13 12 CDR ... is just coming up.

08 21 13 25 CC That looks real fine. It's a real good picture.

HAWAII through BERMUDA (REV 135)

08 21 16 14 LMP Jack, is this the pass that takes us up by Tuscon?

08 21 16 55 LMP There's a beautiful sight today. The sun's lighting up the whole Gulf of Mexico.

08 21 17 04 LMP We can see Lake Okeechobee from here.

08 21 17 15 LMP Houston, Apollo 7.

08 21 17 18 CC Roger. Go ahead, 7.

08 21 17 19 LMP Roger. There's a beautiful lighting ... around here.

08 21 17 29 CC It looks like Donn needs a shave.

08 21 17 31 CDR I think we all do.

08 21 17 40 CC If anybody is near the camera, they might switch the ALC position.

08 21 17 46 LMP Okay.

08 21 17 52 CC I think it was better the other way.

08 21 17 55 LMP Okay. We'll go back.

08 21 18 12 LMP It looks like a beautiful day all the way from -  
beginning with the Gulf Coast on around to the  
tip of Florida.

08 21 18 20 CC That's good news.

08 21 20 14 CC Could we have opposite omni, Apollo 7?

08 21 20 20 CDR Roger. Do you still have the picture?

08 21 20 24 CC We've still got it; we've got it for a couple  
more minutes.

08 21 20 34 CC Looks like you're doing a little looking for  
landmarks, Donn.

08 21 20 40 CMP ...

08 21 20 41 CDR That's one of the most spectacular sights I've  
seen, just now, all the way across the States.  
You can see the whole Florida peninsula lit up  
by the sunrays. It's morning, of course, all the  
way from the west coast, all the way across the  
Gulf Coast.

08 21 20 58 CC Copy that.

08 21 21 51 LMP Hey, Jack, on magazine R, frames 58, 59, and 60  
were taken looking towards Florida on this pass.

08 21 22 03 CC Okay. I log that.

08 21 22 05 LMP The last one is looking down at the Cape. Got  
a lot of sun coming in the lens; I hope we have  
some nice pictures of it.

08 21 22 12 CC Yes, we can see it's pretty sunny in there.

08 21 22 26 CC Hey, Walt.

08 21 22 30 IMP Yes?

08 21 22 31 CC What's the coil-like wire that's coming right in front of the lens there?

08 21 22 39 IMP See that?

08 21 22 40 CC Yes, we can see it.

08 21 22 42 CDR That's the water gun.

08 21 22 43 CC That's what we thought.

08 21 22 46 IMP Can you actually see all three of us sitting in here like this?

08 21 22 49 CC I can just barely see you. It looks like you're chewing on something, and I can see Donn real good, but I can't see Wally.

08 21 22 59 IMP Donn came up to join us especially for the show.

08 21 23 02 CC Okay.

08 21 23 03 CDR He has been down below with the computer.

08 21 23 06 CC I can see Wally now. He's just handing - no, that's Donn that has the map.

08 21 23 13 CMP They don't let me up here very often.

08 21 23 16 CMP Only for the show.

08 21 23 18 CC Roger.

08 21 23 19 CMP Somebody has to pump the pedals down there to keep us going.

08 21 23 23 CC Copy that.

08 21 23 31 CC It looks like we're just about to lose the picture.

08 21 23 45 LMP Did you see the beards we've got up here, Jack?

08 21 23 48 CC Sure can.

08 21 23 53 CC Okay. The picture's fading now. You can let Donn go back to work.

08 21 24 29 CMP Roger, Jack. I'm only allowed up - I can only get up here for special occasions like SPS burns and TV shows.

08 21 24 37 CC Copy that. You can go back to work now. The TV's OFF.

ASCENSION (REV 135)

08 21 36 49 CC Apollo 7, Houston through Ascension.

08 21 37 08 CC Apollo 7, Houston through Ascension.

08 21 37 27 CC Apollo 7, Apollo 7. Do you read, Houston?

08 21 37 47 CC Apollo 7, Apollo 7. Do you read, Houston?

08 21 38 00 CC Apollo 7, Houston. Opposite omni.

08 21 38 15 CC Apollo 7, Houston.

08 21 38 21 CDR Go ahead.

08 21 38 22 CC Okay. We've got good solid TM. You can start P22.

08 21 40 12 CC Apollo 7, how are you doing with the marks on P22?

08 21 40 18 LMP We're working on it.

08 21 40 20 CC Okay.

08 21 40 27 CC We're about 1 minute LOS Ascension; we get Tananarive at 50.

0 08 21 40 57 CC Donn, if we lose you here, we want you to continue this thing, recording it in high bit rate; and then when you've finished the program, then go to your - up telemetry to your COMMAND RESET back to NORMAL. We'll dump it back over the States.

08 21 41 12 CMP Okay. And then you want high bit rate if we don't get it real time.

08 21 41 19 CC Okay. Just about to lose you.

08 21 41 21 CMP Roger. Jack?  
TANANARIVE (REV 135)

08 21 52 54 CC Apollo 7, Houston through Tananarive.

08 21 53 16 CC Apollo 7, Houston through Tananarive. Standing by.

08 21 53 40 LMP Houston, Apollo 7.

08 21 53 42 CT Roger.

08 21 54 02 CC Apollo 7, Houston.

08 21 54 05 CMP This is Apollo 7. Do you read?

08 21 54 07 CC Roger. You're about two-by, Donn. We're standing by here.

08 21 54 13 CMP Okay. You're going to get some sleep remarks.

08 21 54 17 CC Roger. Donn, could you give me an approximate GET. The tape was stopped on that P22.

08 21 54 26 CMP Jack, I'll give you the rundown here. Do you read me okay?

08 21 54 30 CC I'd rather get to wait till Carnarvon to get the rundown so I don't miss anything.

08 21 54 36 CMP You won't miss a hell of a lot if you don't get it here. Okay. If you like, I'll give you a little preview. We did not get the results that you're after. We didn't get a damn thing, in fact. All we got was PROGRAM ALARM and a RESTART light and a CMC light.

08 21 54 51 CC Roger. I understand; I copy you got a PROGRAM ALARM, RESTART, and a CMC light.

08 21 55 13 CMP I still read your negative numbers, and it happened when I punched the PROCEED button and stepped in to the program, P20. I think it's a result of ... realign lights.

08 21 55 29 CC Okay. Donn, you faded there, I didn't quite get it all.

08 21 55 36 CMP I didn't get anything.

08 21 55 38 CMP ... over Carnarvon.

08 21 55 51 CC Okay, Donn. Copy. You didn't get anything in P22. We'll be with you over Carnarvon at 05.  
CARNARVON (REV 135)

08 22 05 36 CC Apollo 7, Houston through Carnarvon.

08 22 05 45 CMP Carnarvon, Houston, Apollo 7. How do you read me?

08 22 05 50 CC I read you five-by, Donn.

08 22 05 53 CMP Okay. Jack, I don't know if you've got what I said at Ascension or not. Did you read all that?

0 08 22 05 57 CC Negative. You faded out at Ascension, and at Tananarive you were just about two-by, fading in and out also.

08 22 06 05 CMP Okay. I'll start over. We got into the proper attitude, and I got the horizon into the sextant fixed line of sight. I ran through P22 as per your instructions, up through step 10, I believe, where you proceed, and the next display and - well, anyway, step 10, when I hit PROCEED, I got a PROGRAM ALARM, a RESTART light and a CMC light.

08 22 06 35 CC Okay, Donn - -

⊖ 08 22 06 36 SC I tried to ENTER on the VERB side to see what the alarm was, and the computer wouldn't take it. It was locked up tight. A few minutes later, we decided to try to unlock it, so we did the go-jam procedure. Hit RESET, marked REJECT and RESET at the same time, and that unlocked it. I looked at the program alarm and it was 1302, which says that the computer was trying to work with the square root of negative numbers. I think probably as a result of trying to do marks on the horizon which is a couple thousand miles away.

08 22 07 07 CC Okay. Donn, I want to ask you, on that step 10, when you were setting your option, did you use the unknown or the known - -

○

08 22 07 16 CMP I loaded in known landmarks.

08 22 07 18 CC Okay. Copy that. That's what we wanted, and so we have got something to mull over down here on the ground.

08 22 07 27 CMP You sure do. I want to compliment all the - whoever it was that thought up that little rig, that one really got to us.

08 22 07 35 CDR Jack.

08 22 07 36 CC Okay, Donn - -

08 22 07 37 CDR Jack.

08 22 07 39 CC Go ahead, Wally.

08 22 07 40 CDR I have had it up here today and from now on, I am going to be an onboard flight director for these updates. We are not going to accept any new games like gaining 50 feet to the DELTA-V counter for a burn, or doing some crazy tests we never heard of before.

08 22 07 54 CC Roger - -

08 22 07 55 CDR Each test is going to be reviewed thoroughly before we act on it.

08 22 07 59 CC Okay. Understand that, Wally.

08 22 08 03 CDR And I suggest that when something like this comes up again, that you take it over the simulator, run it through, if it wrings out, we may try it for you.

08 22 08 13 CC Copy. Could you give me the approximate GET that you went to COMMAND RESET, Wally?

08 22 08 23 IMP It was only a few minutes after we left your - LOS last night, last night when you called.

08 22 08 27 CC Okay. Copy. Do you think you will be able to do the P22 landmark tracking now?

08 22 08 36 CDR Jack, we went ahead and used your last NAV check for the update. It wrang out, so rather than taking erasable, we will go ahead and do the landmarks; and after that, we want to check the erasable.

08 22 08 50 CC Okay. Copy that. I have a voice P27 update to give you at this pass, too, over Carnarvon here.

08 22 09 01 CDR What's behind that one?

08 22 09 03 CC That was part of the flight plan. It is just to give you prior to the landmark tracking here, in case you need it.

08 22 09 11 CDR Okay. We buy it.

08 22 09 12 CDR ... kind of hard to us up here from now on.

08 22 09 16 CC Okay. And the other thing is on the P22 landmark tracking area, you going to do it? If you are going to maneuver in minimum impulse, we are recommending AC roll for quad balance. If you are going to use the DAP, we would

recommend failing quad A and B, this again for balance fuel.

08 22 09 37 CDR Are you saying that B and D is below A and C now?

08 22 09 44 CC No. A and C, A and B are the low quads, we would like to fail those and just maneuver in quad C and D, if you are going to use DAP control for this landmark tracking.

08 22 09 55 CDR We are going to use pulse, DAP is too expensive.

09 22 09 58 CC Okay. If you are going to use pulse, then in SCS, we would recommend AC roll and BD roll OFF, and the rest of the channels ON.

08 22 10 10 CDR Starting right now.

08 22 10 11 CC Okay.

08 22 10 14 LMP Ready to copy, Jack. Go.

08 22 10 16 CC Okay. This is state vector VERB 71: 216 plus 14 plus 00 21 01605 00001 75414 66060 13056 34401 06175 07200 50152 41550 70237 43677 03151 11244 11217 07040. The NAV check: 215 44 all balls minus 1995 plus 10145 2335. And could you delay the readback just a second?

08 22 12 10 LMP Roger. Readback follows: VERB 71 216 1400  
21 - -

08 22 12 20 LMP Did you say delay, Jack?

08 22 12 22 CC Roger. Delay just a second, Walt.

08 22 12 48 CC Okay, Wally?

08 22 12 52 CDR Go ahead.

08 22 12 53 CC Okay. Because of the CMC light and the go-jam procedure, we have got to go back through and do a P51 and a P52, option 2. The T align time will be 215 plus 00 plus 00.

08 22 13 20 CDR Roger. ... we can get it right now.

08 22 13 25 CC And I'm ready on the readback there, Walt.

08 22 13 33 IMP Roger. Readback follows: VERB 71 216 14 00  
21 01605 00001 75414 60601 13056 34401 06175  
07200 - - 50152 41550 70237 43677 03151 11244  
11217 07040 and I'll give you the T align time  
is 215 plus 00 plus 00. NAV check: 21544  
4 ball minus 1995 plus 10145 2335. Over.

08 22 14 22 CC Roger. Voice P27 was correct, and your T align was correct also.

08 22 14 28 IMP Okay. Thank you, Jack.

08 22 14 35 CDR Jack, have you detected the concern? We got a computer that bogs under, and the reason I think you understand why.

08 22 14 40 CC Roger. It has concerned us equally as much, Wally.

08 22 14 44 CDR I know, but we have a bigger problem right now.

08 22 14 48 CC Roger.

0 08 22 14 51 CDR I hope everybody is learning that you don't make updates like that without a lot of thought. This is not a simple machine; it's very sneaky; it has a lot of steep paths in it, and I want everything validated before we train any more with it.

08 22 15 05 CC Okay. Wally, we want to get a VERB 74; we would like to get an E mod dump here before you go over the hill. We are about 1 minute 15 seconds LOS.

08 22 15 15 CDR We've got alignment coming up, sorry about that.

08 22 15 22 CC Roger. Wally, we still would like to get that VERB 74 and catch the dump before you go over the hill.

08 22 15 27 CDR Okay.

08 22 15 41 CC Okay. We are about 40 seconds LOS Carnarvon, we get Guam at 21.

08 22 15 49 CDR Okay. Looks like we are in good shape here, line them up and continue.

08 22 15 53 IMP You got the data dump, Jack?

08 22 15 56 CC Just a minute.

08 22 16 03 CC Okay. Keep dumping, Wally, as you go over the hill, and we'll get as much as we can.

08 22 16 09 CDR Roger. - - Thank God this isn't tomorrow.

08 22 22 54 CMP 214 hours and 22 minutes. Program 52 opposite 02, gyro torquing angles plus two balls 744

plus two balls 376 minus 01696. Star distance angle of five balls.

08 22 23 14 CC Okay. Copied that, Donn.

08 22 23 17 CDR Hey, you're up, are you?

08 22 23 19 CC Roger. Read that.

HAWAII (REV 135)

08 22 32 16 CC Apollo 7, Houston through Hawaii.

08 22 32 22 CMP How does our eraseable look, Jack?

08 22 32 26 CC It takes us 15 or 20 minutes, Donn, to have the people look at it in the back room.

08 22 32 32 CMP Okay.

08 22 32 33 CDR That's a lot better than they did when we had to dump it down at the Cape.

08 22 32 36 CC You're right.

08 22 32 38 CDR What was that? Three months?

08 22 32 44 CC We'll get you the word to that as soon as we can.

08 22 32 48 CDR Roger. Jack, we'll give that last goop to the lead, elbow, and pipe set.

08 22 33 46 CC Wally, I have the morning news and any football scores you're interested in.

08 22 33 52 CDR Roger. Go ahead.

08 22 33 55 CC Okay. Jackie Kennedy and Aristotle Onassis are to be married today on his island off Greece. They tell me that back here in Houston the city is sinking the last 65 years, that parts of the city have sunk as much as 6 feet. What scores would you like?

O 08 22 34 16 CMP I've already heard that UCLA lost. How about the University of Houston?

08 22 34 23 CC They didn't play.

08 22 34 29 CDR You might run up the score on our fuel so far.

08 22 34 31 CC Okay. In work.

08 22 34 33 CDR That was a real load up as far as I could tell.

08 22 34 36 CC Roger.

08 22 36 45 CC Wally, we've got an RCS chart update for you.

08 22 36 53 CDR Go.

08 22 36 55 CC Okay. 543 pounds.

08 22 36 58 CDR 543.

08 22 36 59 CC Roger.

08 22 37 13 CDR Except for the burn, what did we accomplish with all that?

08 22 37 23 CC Say again, Wally.

08 22 37 25 CDR Except for the burn 6, what did we accomplish today?

08 22 37 36 CC Well, we're going to get a lot of landmark tracking in, and I think that will pretty much accomplish what we set out to do.

08 22 37 45 CDR Yes, we're going to burn on that, though. I haven't finished flying that part.

08 22 38 00 CDR If we subtract out the burn there, burn 6, I'd say we blew about 25 pounds on those normal experiments.

C 08 22 38 10 CC Roger.

0 08 22 39 03 CDR Jack, what's .... Do you read?

08 22 39 07 CC Go ahead, Wally.

09 22 39 09 CDR What's so discouraging is I sit up here and we pulse all over the place trying to save a couple of pounds of fuel, and some guy comes along and puts it in tight, tight, tight deadband right through perigee.

08 22 39 19 CC Roger. Understand. We discussed all that before we read up the flight plan to you, and we really wanted to do it.

08 22 39 30 CDR I understand that, but why do we have to have tight deadband and then turn it off to get a coding test? I can do that in pulse mode. I don't need to fly this spacecraft for 26 minutes in tight deadband and then let it drift. In fact, in the minimum pulse, I can get out of the thruster in pulse mode.

08 22 39 48 CC Roger. I understand.

08 22 39 50 CDR I wish somebody would make the people aware of that.

08 22 39 56 CC Roger, Wally.

08 22 39 57 CDR In tight deadband, it sits here and oscillates in roll alone, plus or minus two-tenths of a degree per second. In pulse, I can get about one-one-hundredth of a degree per second.

( ) 08 22 40 08 CC Roger.

0 08 22 40 10 CDR That's what we are complaining about.

08 22 40 12 CC I understand.

08 22 40 27 CDR Jack, I would like to have you call Frank Bor-  
man and inform him he better go over his total  
flight plan from liftoff in real time and check  
his time line out for sleep, work cycles, and  
for food periods.

08 22 40 45 CC Roger. Copy.

08 22 40 47 CDR And not too soon.

08 22 40 49 CC Roger.

HUNTSVILLE (REV 135)

08 22 41 39 CDR Jack?

08 22 41 40 CC Go ahead, Wally.

08 22 41 42 CDR Can you read the DSKY now?

08 22 41 45 CC Negative. We've been handed over to the  
Huntsville. We don't get data there. We'll  
have to wait till California.

08 22 41 51 CDR Okay. When we come over California, I'll show  
you what zero roll looks like and what zero  
yaw looks like in pulse.

08 22 41 57 CC Roger.

08 22 42 00 CDR We've got a lot of graphs going today.

08 22 43 08 SC ...

CALIFORNIA through ANTIGUA (REV 135)

08 22 47 06 CDR Houston, Apollo 7.

08 22 47 09 CC Go ahead, 7.

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08 22 47 10 CDR Do you read the DSKY?  
08 22 47 15 CC Affirm.  
08 22 47 16 CDR Note roll and yaw. ... I didn't take the  
26 minutes to get it that tight, either.

## CALIFORNIA through ANTIGUA (REV 136)

08 22 51 26 CDR Houston, from up here, we can't see Galveston.  
08 22 51 30 CC Roger.  
08 22 51 31 CDR You've got some high cirrus that blocks it  
out on top of low altitude.  
08 22 51 37 CC Okay. Copy.  
08 22 52 31 CDR Jack, I don't know whether to pass this down  
to you or not, but the light, sunlight - gives  
us a hard time reading the DSKY and DELTA-V  
counter, and the MET. We may need some shade  
type device up here to permit us to read the  
instruments.  
08 22 53 01 CC Okay. I've logged that.  
08 22 53 03 CDR That's what got to us on that 50 foot per sec-  
ond overburn the other day. I'll have to reset  
the DET now to get the MET. I can't read the  
MET with full bright.  
08 22 53 17 CC Okay. I logged that, Wally.  
08 22 53 19 CDR Roger.  
08 22 53 24 CT You need the high bit rate or low bit rate.  
08 22 55 23 SC Frame 59, magazine R, Havana.  
08 22 55 31 CC Roger.

⊖

⊖

08 22 55 33 CDR Now, Jack, you can say today that we're a small moon over Miami.

08 22 55 38 CC Roger.

08 22 55 46 CMP Got 5 marks, Jack, on Coral Gables.

08 22 55 51 CC Okay. Real fine, Donn.

08 22 55 54 SC Or that key, whatever it is; Key Biscayne, I guess.

08 22 59 39 CC Apollo 7, Houston.

08 22 59 41 LMP Go ahead, Jack.

08 22 59 43 CC I have the PAD for this landmark - second revolution landmark tracking.

08 22 59 52 CMP Wait one.

08 22 59 54 LMP Jack, the second landmark is clobbered with clouds. I can't see it.

08 22 59 58 CC Okay. That's the number 71?

08 23 00 01 LMP Right.

08 23 00 02 CC Okay. Real fine.

08 23 00 10 LMP Go ahead, Jack. Ready.

08 23 00 12 CC Okay. The first one is landmark 11, that's 54 miles north of ground track, 216 plus 23, shaft 325, trunnion 033. Number 2 - number 128, that's 1 and 1/2 miles north of ground track, 216 plus 34, shaft 000, trunnion 030. Third, number 144 at 16 miles north of ground track, 44, 350 shaft, 030 trunnion. Number 4 227, 45 miles north of ground track 216 plus 57 GET, 342 shaft, 029 trunnion, and that's all.

08 23 01 41 CMP Roger. Jack, the last part I didn't get the -  
how far north or south.

08 23 01 44 CC Okay. The last one is 45 miles north of ground  
track.

08 23 01 50 CMP Okay. I'll give you the landmark number, the  
GET, 227 for that one, 216 plus 57. Going back  
to the beginning with landmark 11, 216 plus 23;  
landmark 128, 216 plus 34; landmark 144 at 216  
plus ...4.

08 23 02 11 CC Roger. You faded on the last one, 216 plus 44.

08 23 02 14 CMP Right. On that one, what was the shaft angle?

08 23 02 17 CC Okay. Shaft was 350.

08 23 02 25 CMP Thank you.

08 23 02 32 CC Okay. We are about 1 minute LOS Antigua. We'll  
pick you up at Ascension at 10.

08 23 02 38 CDR Roger. Note 60 and 20 again.

08 23 02 43 CC Copy.

ASCENSION (REV 136)

08 23 10 56 CC Apollo 7, Houston through Ascension. Standing by.

08 23 11 25 CC Apollo 7, Houston through Ascension. Standing by.

08 23 17 32 CC Apollo 7, we're 1 minute LOS Ascension. We pick  
up Tananarive at 26.

08 22 17 38 SC Roger. We're GO here.

TANANARIVE (REV 136)

08 23 27 30 CC Apollo 7, Houston. Standing by Tananarive.

08 23 28 05 CC Apollo 7, Houston. Standing by through Tanana-  
rive.

08 23 32 40 CC Apollo 7, Houston. Two minutes LOS Tananarive.  
Carnarvon at 41.  
CARNARVON (REV 136)

08 23 41 22 CC Apollo 7, Houston through Carnarvon. Standing by.

08 23 41 41 CDR Houston, the oxygen masks work very well.

08 23 41 45 CC Roger. Copy that.

08 23 50 14 CC Apollo 7, Houston. One minute LOS Carnarvon.  
We'll pick you up at Guam at 53.

08 23 50 53 CC Apollo 7, Houston. To tell you that Guam is down,  
we will pick you up at Hawaii at 08.

08 23 52 40 CT Go COMM TECH. We'll have Guam but not Guaymas.  
GUAM (REV 136)

08 23 54 10 CC Apollo 7, Houston. Now through Guam. Standing by.

08 23 54 14 CDR Roger. Loud and clear.

08 23 54 16 CC You also.

08 23 54 18 CDR Roger. Donn and I tried out the oxygen masks,  
and it was a ...

08 23 54 30 CDR Houston, did you read?

08 23 54 32 CC Say again, Wally.

08 23 54 34 CDR Donn and I tried out the oxygen masks; it was  
a mandatory DTO.

08 23 54 40 CC Roger. Copy that.

08 23 57 48 CDR Houston, Apollo 7.

08 23 57 50 CC Go ahead, 7.

08 23 57 51 CDR Roger. We had a PROGRAM ALARM that anomalied  
too fast. What we were doing was trying the

lights all turned out to see the computer exterior lights and had a GMI power ... light -

08 23 58 12 CC That was when you turned the lights down you got it?

08 23 58 16 CDR That's affirm. Oh no, we are not sure; I had the numerics down also. I brought the lights back up again, and the PROGRAM ALARM was on.

08 23 58 23 CC Yes, we can read it here, 1105.

08 23 58 27 CDR Roger. Print. We tried to get in a variable in the exterior light, and we are trying to see if it came on.

08 23 58 35 CC Okay.

08 23 58 55 CDR That occurred in P00, by the way.

08 23 58 57 CC Roger.

09 00 02 18 CC Apollo 7, you are about 1 minute LOS Guam. We get Hawaii at 08.

09 00 02 23 CDR Roger. Who is that superduper ... with you?

09 00 02 28 CC That's the number 1 substitute.

09 00 02 39 CDR (Laughter) She's running along pretty well today.

09 00 02 42 CC Yes, all the systems looking pretty good, Wally.

09 00 02 46 CDR Going to have to ask you to watch those new flight plan revisions, though.

09 00 03 00 CDR You been east or north, I mean west or north?

09 00 03 05 CC Say again, you are coming garbled.

09 00 03 07 CDR Have you been west or north?

09 00 03 17 CC Oh, north.

0

09 00 03 20

CDR

How is it looking?

09 00 03 22

CC

Pretty good.

09 00 03 23

CDR

Good.

09 00 03 42

CDR

...

09 00 03 48

CC

We are just about LOS. We will pick you up at  
Hawaii.

## HAWAII through GOLDSTONE (REV 136)

09 00 09 06 CC Apollo 7, Houston through Hawaii. Standing by.

09 00 09 10 CDR Roger.

09 00 09 27 CDR We're refilling the PLSS tank; we took some oxygen out of it.

09 00 09 32 CC Roger. Copy that.

09 00 09 36 CDR When we first picked up the masks, one of the test buttons was depressed, and we turned on the oxygen. We had full flow through it.

09 00 09 47 CC Okay. Copy.

09 00 09 49 SC It was still a mandatory DTO.

09 00 09 52 CC Did they make much noise, Wally, through that depressed button?

09 00 09 55 CDR Yes, you could hear it very easily, Tom.

09 00 09 57 CC Okay.

09 00 09 59 CDR But Donn and I were still grabbing for masks rather fast.

09 00 10 02 CC Okay.

09 00 10 08 CC Well, Wally, an interesting point: about 4 more hours the total man hours up there will exceed Gemini 7.

09 00 10 15 CDR Four more; very good.

09 00 10 19 CC We don't have all the PM ON, but I can imagine DELTA-P lights are all three ON.

09 00 10 24 CDR (Laughter) Affirm. Yes, we found out we had 11 days food for 12 days work, but we'll only be short one meal.

09 00 10 35 CC Roger.

09 00 10 38 CDR I passed the word down for all command pilots to check their flight plans from liftoff to splash for work rest cycles and for meals.

09 00 10 47 CC Okay.

09 00 10 49 CDR We ended up with 12 working days and about that many days sleep.

09 00 10 57 CC Yes, we'll talk to you down at the Cape, too, as soon as you get down there.

09 00 10 58 CDR Roger.

09 00 11 01 LMP Hey, Tom, what you might do is take a look at those sleep-day awake cycles and pick out the meal you want there, too. Sometimes they try to slip a sleep cycle in between meal B and C, for example, and you end up eating dinner for breakfast if you follow this schedule.

09 00 11 18 CC Will copy.

09 00 11 39 CC Gemini 7, Cape.

09 00 11 42 SC Go ahead.

09 00 12 43 CC Okay. Let's try that one more time. Apollo 7 from Houston. Does that sound more up to date?

09 00 12 49 SC Roger. Check. Say again, Deke.

09 00 12 53 CC Hey, listen, let's go over this reentry thing one more time since we've got a little slack here in good communications. Let me tell you what I - -

09 00 13 01 CDR One of the things I plan on doing after we break off the burns today is put on my suit and see how we stand in the couch with the helmet off.

09 00 13 10 CC Roger.

09 00 13 12 CDR I'd like to give you a report on that. That'll happen, oh, probably an hour and a half or 2 hours from now.

09 00 13 18 CC Okay. Let me tell you - -

09 00 13 19 CDR Go ahead.

09 00 13 20 CC Let me tell you what our recommendation is, and then your office is going to have to play it by the best knowledge you've got up there. Okay. We're recommending you come in with the torso on obviously for the leg protection which we talked about yesterday.

09 00 13 32 CDR Roger.

09 00 13 33 CC And secondly, if you can valve salvo with the helmet popped loose, keep the helmet on at least down through 50,000. Pop it so you can clear your nose, and then have it on for protection on landing. That, of course, is optional. The glove situation is the same. I don't think it matters whether they're on or off. The backup to that would be to come in without helmets or gloves, and in that case, we think you ought to provide yourselves with some head protection on the head rest.

○ 09 00 14 05 CDR Roger. Our problem is if we pop the helmets off, we'll have to have the gloves off to get them back on.

09 00 14 13 CC That's correct.

09 00 14 14 CDR And for restraint I don't think - it's very hard to maneuver them around, and we're a little worried about getting them back on again, particularly if we pick up drogues and then the 1 g environment, and there we've got three bomb shells running around the cockpit with us on landing.

09 00 14 30 CC Yes, I think the glove situation is pretty clear cut. I don't think you ought to mess with those. I think it may be desirable to have head protection from the helmet on landing, however, if we can figure out how to do it.

⊖ 09 00 14 39 CDR Yes, we're keeping it and just cock it back and get to our noses.

09 00 14 43 CC That was what we were thinking.

09 00 14 46 CDR But the odds of making up the neck rings again are pretty slim when we are restrained.

09 00 14 50 CC I suspect that's true, but I think you're probably still better off with the helmet on and the head loose than not on at all.

09 00 14 57 CDR Okay. We'll play the game up here today.

09 00 14 59 CC Okay. Fine.

○ 09 00 15 02 CDR Roger. Thanks for at least giving us an option on it.

09 00 15 04 CC Roger.

09 00 18 02 LMP Hey, Deke, I hope somebody meets us with a safety razor on that carrier.

09 00 18 08 CC Say again, Walt.

09 00 18 11 LMP Somebody meets us with a safety razor on that carrier.

09 00 18 19 CC Roger. I think there may be a couple.

09 00 18 25 CDR The caption in the flight plan is beards are NO-GO.

09 00 18 30 CC Got that.

09 00 18 36 CDR ... that pulse control is beautiful.

09 00 18 41 CC Copy.

09 00 18 51 CDR Is Tom still there?

09 00 18 57 CC Roger.

09 00 18 59 CDR Okay. For roll, Tom, with one ring, it's 8 pulses for two-tenths of a second.

09 00 19 06 CC Yes.

09 00 19 08 CDR For pitch and yaw, it's about 10 pulses per two-tenths of a degree per second.

09 00 19 14 CC Okay. Got it, and that's using just the one ring there, right? Are you using just -

09 00 19 22 CDR Just rings in the roll, yes.

09 00 19 23 CC Yes.

09 00 19 24 CDR The pitch is pure.

09 00 19 25 CC Okay.

09 00 19 53 CC Apollo 7, Houston. Wally, does the sound on minimum impulse sound like Gemini with those cracks?

09 00 20 01 CDR Negative. It sounds like, the best description we've thought of is like hitting on steel drums in a steel band.

09 00 20 08 CC Yes. Okay.

09 00 20 12 CDK It's sort of like the Gemini, but a lot worse. Very discernible, every one of them.

09 00 20 18 CC Okay.

09 00 20 20 CDR They are in a different tune. The pitches are about one note lower than yaw, and roll is sort of an individual note.

09 00 20 28 CC Okay.

09 00 20 45 LMP Land ho.

09 00 20 50 LMP Say, Jack, can you give me a map update for the closest - -

09 00 20 59 CC Okay. Stand by. Okay, Walt, I've got it. Are you ready to copy?

09 00 21 11 LMP Go.

09 00 21 12 CC Okay. You're coming up on REV 137 here. The time 217 plus 25 plus 25. The longitude of the node 144.1 degrees east.

09 00 21 32 LMP Copy.

09 00 21 58 CDR Frame 61, magazine R for Romeo, and ... very close behind the time off the west coast.

09 00 22 08 CC Okay.

09 00 22 11 CDR And a very uninteresting ...

09 00 22 28 CDR Our target is wide open.

09 00 22 30 CC Roger.

09 00 22 53 CDR Jack, if you'll watch the ... you'll see the trun-  
nion start to decrease, and we're tracking AUTO  
optics on the target.

09 00 23 04 CC Okay. We're watching P22.

09 00 23 06 CDR ... roll right about 5 degrees to optimize on the  
target pickup.

09 00 23 16 CC Okay.

09 00 23 22 CDR Jack, you can see her sitting just about at ORB  
rate, pitch down, a little bit to go. We got a  
better view.

## GUAYMAS through ANTIGUA (REV 136)

09 00 24 11 CDR Guaymas, we can see your station.

09 00 24 30 CDR Guaymas, Apollo 7. Buenos dias and muchas gracias.

09 00 24 41 CC We copied, Wally, but I don't know whether Guaymas  
got it or not.

09 00 24 45 CDR Roger.

09 00 24 46 CC It sounds Spanish to me.

09 00 24 48 CDR Si.

09 00 25 06 CDR How's our cut for going over Mexico City?

09 00 25 14 CC Stand by one, Wally.

09 00 25 29 CC Okay. It looks like you're going to be coming  
fairly close to Mexico City.

09 00 25 34 CDR Yes, it looks like that from the path we're going.  
North or south? Looks like we're going to be north.

09 00 25 42 CC That's what we show.

09 00 25 44 CDR Roger.

09 00 26 21 CDR Tom, one of the real kicks out of this left seat is you can sit here and just scrunch it down like a submarine commander working with a periscope. I've got the line in right now with number 1 eight ball, and we can just cruise back and forth with no strain at all.

09 00 26 36 CC Okay. That's out of the number 1 window and the eight ball.

09 00 26 38 CDR Number 2 window and the number 1 eight ball.

09 00 26 41 CC Roger.

09 00 26 42 CDR You can drop it down about 2 or 3 feet on the slightest motion. This IVA stuff is great sport. No problem at all.

09 00 27 00 CDR Out in front of the number 1 ball to take the rates out.

09 00 27 08 CC Wally, Houston. What about when you're in local vertical in the dock position. Can you see the horizon pretty well?

09 00 27 14 CDR Yes.

09 00 27 18 CC Okay. And I asked Donn late the other night when you were asleep, to make some marks on that side window just with a pencil so we can calibrate the simulator later on, you know, for the attitude out the side window.

09 00 27 27 CDR Oh, you mean for zero pitch?

09 00 27 29 CC Yes.

09 00 27 31 LMP Tom, I can give you a couple of figures on that. If your head is laying in the center couch at zero pitch, the horizon cuts through right about the middle of the rear side of both number - both side windows, number 1 and 5.

09 00 27 46 CC Okay. Got it. Thank you.

09 00 27 50 CDR Now, you can't see across the cockpit and see the horizon, though. That's the center couch.

09 00 27 55 CC Okay.

09 00 28 03 CDR Don't give up that center window. That's a dream if they can get it to be fixed up right.

09 00 28 08 CC Roger.

GUAYMAS through ANTIGUA (REV 137)

09 00 34 53 CC Apollo 7, Houston.

09 00 34 56 LMP Landmark is a NO-GO with solid overcast.

09 00 35 00 CC Okay. Copy. Wally, the power down that was scheduled at 217, we would like to delay that in order to get a state vector update to you probably through Guam about 217 30 and then we can power down after that.

09 00 35 22 CDR Roger. Are you going to check our instrument, or have you found that it is all right?

09 00 35 25 CC Okay. I haven't gotten the report on that, but I'm waiting for it, and I will get it up to you as soon as I get it.

09 00 35 31 CDR I'd like to get that before we power down. I'd rather not screw it up tomorrow.

09 00 35 36 CC Okay.

09 00 35 38 CDR What is the new time for power down?

09 00 35 41 CC Okay. The power down will be about one half hour later. It will probably be about 217 45. We want to get the state vector update at Guam, and if we don't finish it there, we'll get it through Hawaii.

09 00 35 55 SC We'll keep a computer on the line till we get a GO on the erasable.

09 00 35 59 CC Okay. Real fine.

09 00 37 42 CC Apollo 7, we'll pick you up at Ascension at 47.  
ASCENSION (REV 137)

09 00 47 46 CC Apollo 7. Houston through Ascension.

09 00 47 50 CDR Roger. Loud and clear.

09 00 47 52 CC Roger. Wally, we have got an update on the flight plan for a sleep period here.

09 00 48 01 CDR Go ahead, Jack.

09 00 48 03 CC Okay. CMP sleep period from 216 through 225, CDR and LMP from 225 to 234.

09 00 48 18 CDR That's affirm, but ... maybe we can stuff into it.

09 00 48 39 CC Walt, the nodal crossing on REV 137 is 114.1 east.

09 00 48 49 LMP Ca 137?

09 00 48 50 CC Affirm.

09 00 49 37 LMP On that last one, we got five marks and corrected the landmark.

○ 09 00 49 43 CC Okay. Copy that.

09 00 49 46 LMP It was wide open on the coast only I found that the landmark had a three-fourths mile uncertainty, and we picked it up and got a picture of it, too.

09 00 49 58 CC Sounds real good, Walt.

09 00 50 04 CDR We are trying to get pictures of the landmarks that don't have any.

09 00 50 07 CC Okay.

09 00 50 28 LMP Hey, Jack.

09 00 50 30 CC Go ahead, Walt.

09 00 50 32 LMP Roger. We've taken numerous packs of 70mm, S0121. The first batch we took we shot at ASA 64 so we wouldn't have to reset the light meter for S0368, and all the other S0121 packs have been shot at an ASA of 50, and I would like to make sure that you get that to the people that process these. I've marked the pack that was shot at ASA 64.

⊖

09 00 51 01 CC Okay. Copy that.

09 00 51 13 CDR This is really a great machine for taking pictures out of. There are five windows; almost every time you glance up, there is one of us on it.

09 00 51 22 CC That sounds like a pretty good technique there, looking with one of the five windows there.

09 00 51 27 CDR ... We have really got a lot of good pictures.

09 00 51 32 CC Good show.

○ 09 00 51 34 CDR I wish we had a heck of a lot more film up here.

○ 09 00 51 38 CC Okay. We have 1 minute to LOS over Ascension, and we are going to give a data dump over Guam this time, Wally.

09 00 51 45 CDR Roger.  
TANANARIVE (REV 137)

09 01 03 34 CC Apollo 7, Houston through Tananarive. Standing by.

09 01 10 52 CC Apollo 7, we're about to lose you over Tananarive. We'll pick you up at the Mercury at 208.  
MERCURY (REV 137)

09 01 29 38 CC Apollo 7, Houston through Mercury. Standing by.

09 01 20 46 CDR ...

09 01 29 51 CC Roger. Wally, we will stand by for Guam.

⊖ 09 01 29 56 CDR Are you going to update there?

09 01 29 58 CC Affirm. We are going to update at Guam.

09 01 30 02 CDR When do you want the - are you going to go on the erasable?

09 01 30 08 CC Wally, we are going to make another erasable at Guam when we get a good elevation angle as a further check on the Carnarvon data which we are having a hard time getting back from Carnarvon.

09 01 30 21 CDR Okay.  
GUAM (REV 137)

09 01 31 45 CC Apollo 7, opposite omni.

09 01 31 50 CDR Roger.

○ 09 01 32 42 CC Apollo 7, Houston. If you will go to ACCEPT, we will send you the state vector update.

09 01 32 48 CDR You got her.

09 01 32 50 CC Okay. Coming up. Then I have the NAV check for you when you are ready to copy.

09 01 33 14 CDR Go, Jack.

09 01 33 16 CC Okay. 221 plus 30 plus 0000 minus 2953 minus 05172 1803.

09 01 33 41 CDR Roger. 221 plus 30 plus four balls minus 2953 minus 05172 1803.

09 01 33 52 CC Roger.

09 01 34 06 CC Apollo 7, Houston. We are finished with the dump - I mean, we are finished with the state vector update.

09 01 34 14 CDR Say again.

09 01 34 16 CC We are finished with the state vector update. The computer is yours.

09 01 34 19 CDR Good.

09 01 34 22 CC Okay, Apollo 7. We are ready for your E mod dump; could you key in the - -

09 01 34 29 CDR Just a second.

09 01 35 14 CDR Houston, this is Apollo 7.

09 01 35 16 CC Go ahead.

09 01 35 17 CDR Okay. The computer system is clear.

09 01 35 21 CC Okay. We are ready for the VERB 74.

09 01 35 44 CDR Computer is syncing, apparently.

09 01 35 46 CC Okay.

09 01 36 23 CDR On the way down.

09 01 36 25 CC Roger.

09 01 38 54 CC Okay, Apollo 7. We are about to lose you here at Guam. We pick you up at Hawaii at 45.

09 01 39 00 CDR ...

09 01 39 06 CC Okay. Wally, we are through with the E mod dump.  
HAWAII (REV 137)

09 01 45 43 CC Apollo 7, Houston through Hawaii.

09 01 45 47 CDR Roger. Loud and clear.

09 01 45 49 CC You too.

09 01 46 27 CC Apollo 7, Houston.

09 01 46 30 LMP Roger, Jack.

09 01 46 32 CC Okay. Donn, it's going to be about an hour before we have a print-out of this E mod dump, and you can leave the computer powered up at your option.

09 01 46 43 LMP Roger. Wilco; and Donn is in bed.

09 01 46 46 CC Okay. Somebody else has got a high voice then.

09 01 46 53 CDR Wilco. Over and out.

09 01 47 36 CDR Houston, Apollo 7.

09 01 47 38 CC Go ahead, Wally.

09 01 47 40 CDR Can you read the DSKY?

09 01 47 42 CC Affirmative.

09 01 47 45 CDR Notice how tight I'm holding it in. Pulse now.

09 01 48 11 CDR Are you impressed?

09 01 48 12 CC Roger.

09 01 48 14 CDR Pardon?

09 01 48 16 CC Affirmative.

09 01 48 18 CDR That's pretty tight, isn't it?

09 01 48 20 CC Roger.

09 01 48 22 CDR Come on, you can see through that one.

09 01 48 27 CC What - have you got all the switches off, Wally?

09 01 48 31 CDR The CDU's are locked up; the IMU is powered down. Donn just came out of his bed. He was wondering, too.

09 01 48 40 CC I was looking at SCS rate.

09 01 48 43 CDR No fair. That is pretty tight pulse, isn't it, Tom?

09 01 48 53 CC Yes, that's really holding it.

09 01 48 56 CDR Okay. I'll be a good guy.

09 01 49 04 CC Well, Wally, next time around we will give you a call, and you should be passing over this Typhoon Gloria, and it will probably be nighttime, but you should see lots of thunderstorms down below you, just over the Mercury.

09 01 49 16 CDR We got a picture of her earlier today.

09 01 49 19 CC Okay.

09 01 49 20 CDR She's pretty big one. I didn't see it; Donn did. And the eye was very apparent and a very large storm.

09 01 49 27 CC Right. It's given the Mercury a few swells out there.

09 01 49 32 CDR Ah ha. It reminds me of a former Mercury CAP COMM.

○ 09 01 49 43 CDR Has Alan B. been in today?

09 01 49 45 CC No. I was going to remind him of it, though, whenever I saw him.

09 01 49 50 CDR (Laughter)  
GUAYMAS (REV 137)

09 01 54 10 CDR Houston, Apollo 7.

09 01 54 13 CC Go ahead, 7.

09 01 54 16 LMP Roger. Looks like the only DTO we still have running here, we got to make another cut at the CRYO stratification test. I'd like to know what are your intentions and what percentage to do that. I would like to not save that thing until Monday night, for example.

⊖ 09 01 54 35 CC Okay. We will get it to you, Walt.

09 01 54 38 LMP It takes quite a while till somebody pressurizes it. It will take a couple of hours, probably, to run both of them.

09 01 54 45 CC Okay.

09 01 54 51 CDR Well, Jack, could you give me an update when the time is appropriate for us to look for Gloria?

09 01 54 57 CC Okay. Will do.

09 01 54 59 CDR Good.

09 01 55 06 CDR And I guess we need an update on our fuel expended for the day - actually, it should be the fuel remaining - for the chart.

○ 09 01 55 17 CC Okay. In work.

09 01 55 19 CDR Roger.

09 01 57 06 CC Okay. Wally, on information, you should be ready to receive -

09 01 57 10 CC 7, are you reading? Houston.

09 01 57 12 LMP Reading you now. You were cut out there, though.

09 01 57 15 CC Okay. We had a handoff. You should be seeing Gloria about 219 plus 04, somewhere around that time, and the chart update values - 539.

09 01 57 32 LMP Roger. Thank you, 539.

09 02 00 51 CC Apollo 7, Houston. One minute LOS Guaymas; we will pick you up at Tananarive at 37.

09 02 00 57 SC Roger.

TANANARIVE (REV 138)

09 02 38 50 CC Apollo 7, Houston through Tananarive. Standing by.

09 02 39 39 CC Apollo 7, Houston through Tananarive.

09 02 41 42 CDR Roger. Tom, we're reading you.

09 02 41 44 CC Roger. You reading us loud and clear?

09 02 41 48 CDR There's the usual amount of noise.

09 02 42 04 CDR - correction, 1 more day.

09 02 42 06 CC Say again, Wally.

09 02 42 09 CDR I think all of us are thankful we have 1 more day. ... then we can come back home again.

09 02 42 15 CC Roger. Evidently you're reading us. We can barely read you. I'll give you a social update. Father is taking Jo to the ball game this

afternoon. In fact, Lo and Harriet are also going to the ball game.

09 02 42 32 CDR Lo and Harriet going to the ball game, too?  
09 02 42 34 CC Roger.  
09 02 42 38 CDR What game is it?  
09 02 44 10 CC Apollo 7, Houston.  
09 02 44 14 CDR Go ahead.  
09 02 44 15 CC We would like to do a fuel cell O<sub>2</sub> purge.  
09 02 44 23 CDR I can't help you until we get acquisition.  
09 02 44 28 CC Thank you.  
09 02 46 58 CC Apollo 7, Houston. One minute LOS Tananarive; Mercury at 01.

## MERCURY (REV 138)

09 03 01 57 CC Apollo 7, Houston through Mercury.  
09 03 02 01 CDR Roger, Jack.  
09 03 02 03 CC Walt, your E mod dump is GO. You can power down the computer.  
09 03 02 10 CDR Roger.  
09 03 02 33 LMP Jack, who is playing the Oilers today?  
09 03 02 37 CC The Jets are playing the Oilers today.  
09 03 02 41 LMP Okay.  
09 03 02 51 CC Fendell's giving five points.  
09 03 02 56 LMP I'll take him.  
09 03 03 24 LMP Hey, Ed - I mean Tom, tell Ed I'll go for two and take the Oilers and five.  
09 03 03 31 CC He's covered.

09 03 03 43 LMP Candy from a baby.

09 03 03 45 CC We'll call the results up in about 5 hours or so.

09 03 03 50 CDR If we're blacked out up here, we'll power down the computers shortly, and wait to see if Gloria's hanging out around this area.

09 03 03 57 CC Okay. You should be coming right up on it now, Wally.

09 03 04 00 CDR Roger.

09 03 04 02 LMP I agree; nobody should miss Gloria.

09 03 04 09 CMP It's a real big G, I guess.

09 03 04 13 CC No comment.

09 03 05 35 CDR We have a shoreline that seems very brightly lighted up ahead of us here.

09 03 05 39 CC Say again, Wally.

09 03 05 42 CDR A shoreline about - oh, 50 or 60 miles long, and it's lighted up; looks like about two or three cities.

09 03 05 48 CC Roger.

09 03 05 53 CDR We saw some lightning, and a lot of it - oh, about a minute or so ago.

09 03 05 58 CC Roger. You should be passing over it about now, or already passed over the main part of the eye.

09 03 06 03 CDR Roger.

09 03 07 03 CC Apollo 7, Houston. We're ready to purge the other fuel cells.

09 03 07 08 LMP Houston, this water gun after 10 days use is getting difficult to operate the trigger you use to squirt it; you have to force it back and forth. The cold water tap on the food preparation panel down there also seems to be getting just a little bit tough to operate.

09 03 09 00 CC Okay. Copy that, Walt.

09 03 09 16 CC Apollo 7, Houston. We ran into the same thing with the water gun in the later Gemini flights. It became stiffer as the days progressed.

09 03 09 27 LMP Roger. Thanks.

GUAM (REV 138)

09 03 12 28 CC Apollo 7, Houston. One minute LOS Guam; we pick you up at Hawaii at 21.

09 03 12 35 CDR Roger.

09 02 12 37 LMP I don't know if we told you, but the water that seems to be the freest of gas is the hot water spout.

09 03 12 43 CC Okay. Copy.

09 03 12 50 CDR I think that's why we're fans of the reconstitutable food.

09 03 12 56 CC Roger.

HAWAII (REV 138)

09 03 22 11 CC Apollo 7, Houston through Hawaii. Standing by.

09 03 22 15 CDR Roger.

09 03 22 21 CC Apollo 7, Houston.

○ 09 03 22 25 LMP Yes, Jack.

09 03 22 27 CC Walt, what we would like to do is get - sometime here, get a heater profile on those SPS heaters. Can you copy? It won't take any attitude control or anything; just some heater ON times.

HUNTSVILLE (REV 138)

09 03 26 42 LMP How long will this thing take to run?

09 03 26 44 CC It's a total of 6 hours; I got some times here for you.

09 03 26 51 CC Okay. I'll stick with the flight plan, and we'll probably get finished up when Donn's up.

09 03 26 54 CC Okay. Real fine. Let me know when you are ready to copy.

⊖ 09 03 26 59 LMP Okay. Are these the SPS line heaters that I asked you to turn on and check about 2 days ago?

09 03 27 03 CC That's affirmative.

09 03 27 06 LMP Okay. It's going to help to use the A/B position. I saw no change at all in the A position today.

09 03 28 14 CC Roger.

09 03 28 30 CC Walt, let me know when you are ready to copy this and the flight plan.

09 03 28 35 LMP I'm ready to copy.

09 03 28 36 CC Okay. At 220 plus 57, put the heater switch in A, the SPS line heater switch to A. Okay. At 223 plus 57, put the SPS line heater switch to A/B.

○

09 03 29 32 CC And, at - you want to terminate the test at 227 plus 11 or any time the propellant temperature or oxidizer T align temperature reaches 75 degrees.

09 03 30 01 CC Did you copy that, 7?

09 03 30 03 LMP Jack, I read termination, and I read the 223 plus 57, and after that I couldn't read you.

09 03 30 13 CC Okay. Let me give it again. We are over the Huntsville here, and I'm only reading about two-by. At 220 plus 57, SPS line heaters to A. At 223 plus 57, SPS line heaters to A/B. Terminate the test at 227 plus 11, or any time the propellant temperature, or line oxidizer line temperature reaches 75 degrees.

09 03 30 28 LMP Jack, I assume you're collecting the data on it. Do you want any data from me?

09 03 31 02 CC Okay. Walt, the only thing we want you to note, if you switch the heater position when you are not in station contact, would you log the time.

09 03 31 12 LMP Okay. Will you be in station contact at 220 plus 57?

09 03 31 17 CC Affirmative. These times are all predicated on being in station contact at that time.

09 03 31 25 LMP Okay. Thank you.

09 03 31 27 CC Okay. We are about 1 minute LOS Huntsville; we'll pick you up at Tananarive at 220 plus 13.

09 03 31 35 LMP Roger.

09 03 32 00 CT Huntsville LOS signal very weak; VHF down is also varying in amplitude. Huntsville LOS.

TANANARIVE (REV 139)

09 04 14 19 CC Apollo 7, Houston through Tananarive. Standing by.

09 04 14 27 LMP Roger. Jack, how do you read?

09 04 14 31 CC Reading you about two-by.

09 04 14 33 CMP - Yeah, would it be possible to slip that - piece that for P22 - -

09 04 14 58 LMP Jack, would you check my running the hydrogen stratification test about 20 to 15 percent range or longer ...

09 04 15 18 CC Walt, you're coming weak and garbled. Copied the "did I check about the stratification test." We are in the process of doing this now, seeing if we can move it up a little.

09 04 15 33 LMP Roger. Out.

09 04 22 32 CC Apollo 7, Houston. One minute LOS Tananarive; we pick up the Mercury at 37.

MERCURY (REV 139)

09 04 38 34 CC Apollo 7, Houston through the Mercury. Standing by.

09 04 38 40 LMP Jack, how do you read?

09 04 38 55 LMP Hey, Jack, how do you read?

09 04 38 57 CC You're about four-by, Walt.

Q 27

09 04 39 05 LMP Okay. I don't know if you read my last contact or not. I wanted to see if we couldn't schedule the CRYO stratification test for no less than 15 to 20 percent on the hydrogen and probably no less than 30 to 35 percent on the oxygen. This is to preclude being involved with it some time late Monday.

09 04 39 34 CC Roger. Walt, we're doing that. We're trying to move it up a little bit - oh, we're talking around 232 hours now.

09 04 39 45 LMP Okay. Thank you very much.

09 04 40 16 LMP Jack, we have a third crewman verifying all three oxygen masks now; I just made a mandatory test of the third one.

09 04 40 23 CC Okay. I copy that.

09 04 40 34 CC Apollo 7. Opposite omni.

09 04 41 42 CC And, Walt, I have the block data number 24 for you

09 04 41 47 LMP Roger.

09 04 42 33 LMP I'm ready to copy, Jack, and tell John Llewlyn we're glad we never had to verify how accurate or disaccurate this stuff was.

09 04 42 43 CC Say again on that.

09 04 42 45 LMP Tell John Llewlyn we're glad we never had a chance to verify the accuracy of these blocks.

09 04 42 51 CC Roger.

09 04 42 53 LMP Jack. Go.

09 04 42 55 CC Okay. Block data number 24: 141 dash Alfa Charlie minus 181 minus 0100 222 plus 51 plus 52 6955, 142 dash Alfa Charlie minus 040 minus 0080 224 plus 26 plus 00 6134, 143 dash Alfa Charlie plus 028 minus 0200 225 plus 58 plus 13 5734, 144 dash Alfa Charlie plus 101 minus 0310 227 plus 30 plus 42 5293, 145 dash Alfa plus 230 minus 0270 229 plus 06 plus 36 4372, 146 dash 2 Charlie plus 288 minus 0270 230 plus 43 plus 18 3726. End.

09 04 45 37 LMP Roger. My readback follows: 141 dash Alfa Charlie minus 181 minus 0100 222 plus 51 plus 52 6955, 142 dash Alfa Charlie minus 040 minus 0080 224 plus 26 plus 00 6134, 143 dash Alfa Charlie plus 028 minus 0200 225 plus 58 plus 13 5734. Over.

09 04 46 09 LMP It was just a break, Jack. 144 dash Alfa Charlie plus 101 minus 0210 227 plus 30 plus 42 5293, 145 dash 2 Alfa plus 230 minus 0270 229 plus 06 plus 36 4372, 146 dash 2 Charlie plus 288 minus 0270 230 plus 43 plus 18 3726. Over.

09 04 46 40 CC Roger. That's got it, except that should be 142 dash Alfa Charlie.

HAWAII (REV 139)

09 04 56 46 LMP Houston, Apollo 7. Over.

09 04 56 50 CC Apollo 7, Houston through Hawaii.

09 04 57 00 LMP Roger. SPS line heaters going to A.

09 04 57 03 CC Roger.

O 09 04 57 08 LMP Can you give me a readout on my O<sub>2</sub> manifold pressure, please?  
 09 04 57 15 CC Roger. 102.  
 09 04 57 17 LMP Roger. 102.  
 09 04 57 41 LMP Can you hit me again with the manifold pressure?  
 09 04 57 46 CC 103.  
 09 04 57 55 LMP And the redundant component check is still in work. I'll give you a GO next sight.  
 09 04 57 59 CC Roger.  
 09 05 01 13 LMP Hey, Jack. Redundant component check looks like it's GO.  
 09 05 01 17 CC Roger. Copy that.  
 09 05 02 14 CC Apollo 7. We are 1 minute LOS Hawaii; Ascension for a short pass at 221 plus 38.  
 09 05 02 16 LMP Roger.  
 ASCENSION (REV 140)  
 09 05 39 32 CC Apollo 7, Houston through Ascension. Standing by.  
 09 05 39 38 LMP It's about time you got back on.  
 09 05 39 46 CC Roger. A little garbled there, but good afternoon.  
 09 05 39 50 LMP Good afternoon.  
 09 05 40 46 LMP Hey, Ron. Log LMP for 25 clicks of water.  
 09 05 40 50 CC Roger. Six clicks?  
 09 05 41 07 LMP Houston, Apollo 7. Over.  
 09 05 41 11 CC Houston. Go.  
 09 05 41 13 LMP Roger. Ron, will you log me 25 clicks of water, please?  
 C

09 05 41 17 CC Wilco. Twenty-five clicks.

09 05 41 54 LMP Hey, Ron, we'll all be off COMM here for about 30 seconds. We are trying something.

09 05 42 00 CC 7, Houston. Say again.

09 05 42 04 LMP Roger. I will be off COMM for about 30 seconds here.

09 05 42 08 CC Roger.

09 05 43 16 LMP Back with you, Ron.

09 05 43 19 CC Roger. About LOS. We still show your secondary glycol loop activated.

TANANARIVE (REV 140)

09 05 52 32 CC Apollo 7, Houston through Tananarive. Standing by.

MERCURY (REV 140)

09 06 14 31 CC Apollo 7, Houston through Mercury. Standing by.

09 06 14 35 LMP Roger, Ron.

09 06 14 37 CC Roger. Loud and clear.

09 06 15 31 CC Apollo 7, Houston.

09 06 15 35 LMP Houston, Apollo 7.

09 06 15 36 CC Roger. We show the secondary loop still on. Is that your intention?

09 06 15 43 CDR It is off now.

09 06 15 48 CDR Ron, I just finished putting the suit on.

09 06 15 52 CC Roger.

09 06 15 53 CDR Without gloves - without a helmet. Do you read?

09 06 15 58 CC Roger.

09 06 16 00 CDR And strapped in, blocking my feet up, and I feel that is the way we are going to come in Monday morning - Tuesday morning. It is with suits, no gloves, no helmets, and I'm going to pad the headrest on either side and wear our COMM carriers, not our lightweight headsets.

09 06 16 22 CC Roger.

09 06 16 24 CDR Our heads are still too stuffed up to try to come in with our helmets on and take them off and try to blow our nose.

09 06 16 34 CC Roger. Understand.

09 06 16 37 CDR Okay. You might pass it on to Deke that I actually got in with a suit on, strapped down and tried it out.

09 06 16 44 CC Will do.

09 06 16 45 CDR Very good.

09 06 18 31 CC Apollo 7, Houston. Opposite omni.

09 06 20 56 CC Apollo 7, Houston. One minute LOS; Hawaii at 34, and I may have some ball scores here shortly.

09 06 21 00 CDR Roger.  
HAWAII (REV 140)

09 06 34 51 CC Apollo 7, Houston through Hawaii. Standing by.

09 06 34 55 CDR I hear you loud and clear.

09 06 34 57 CC Roger. The same.

09 06 35 00 LMP What's the late news on a Sunday evening?

09 06 35 05 CC I've got a final on the Dallas and Minnesota football game. Dallas 20, Minnesota 7.

○ 09 06 35 11 CDR That's nice. Any scores on the Oilers yet?

09 06 35 15 CC No, they just started at three.

09 06 35 16 CDR Oh, I see.

09 06 35 17 CC I don't have the score yet.

09 06 35 24 CC Looks like our Kansas boy, Jim Ryun, got second in the 1500 meters in the Olympics.

09 06 35 31 LMP Oh, really. He's the miler, isn't he, Ron?

09 06 35 34 CC Roger.

09 06 35 36 LMP Who got first?

09 06 35 37 CC Kip Kano of Kenya.

09 06 35 42 CDR Yes, he's pretty reliable on it.

09 06 35 47 CC Right.

REDSTONE (REV 140)

⊖ 09 06 47 33 CC Apollo 7, Houston through Redstone.

09 06 47 37 CDR Roger.

09 06 47 39 CC Roger. When you get a chance, request pyro A and B volts and batt C volts.

09 06 47 54 LMP Roger, Ron. Batt C is reading 36 volts.

09 06 47 57 CC Roger.

09 06 48 15 CDR Looking over tomorrow's flight plan.

09 06 48 19 CC Go.

09 06 48 21 CDR I see no hole for the TV game, except for the 237-hour period. And there I think we would have it as a very passive affair, where we don't do anything to se it up; just hook it up and let her rip.

○ 09 06 48 44 CC Roger.

09 06 48 47 CDR Now the next period just prior to 239 hours,  
I'd say we were busy.

09 06 48 59 CC Roger.

09 06 49 00 CDR So during that ninth period, I guess we'll come  
across the States, the 237 plus 30. Looks like  
we could do it if we just plug it in and turn it  
on.

09 06 49 16 CC Roger. I'm not sure what we had scheduled or if  
we had any. Let me check, and I'll pass the word  
up.

09 06 49 21 CDR We're not volunteering; that's our only out, though.

09 06 49 23 CC Roger.

09 06 49 27 LMP Our series ends tomorrow.

09 06 49 31 CC Hey, that's right.

09 06 49 36 LMP Yes, we had it ... coming on Monday morning,  
Tuesday morning, correction.

09 06 49 43 CC Right.

09 06 49 44 LMP Telling you ahead, happily.

09 06 49 45 CC That's good.

09 06 49 48 LMP Pyro A 36.8, pyro B 36.8.

09 06 49 53 CC Roger. And I have your ampere-hours remaining.

09 06 50 00 LMP Roger. Wait one - look, I've got another hour  
to run on SPS line heaters A before going to A  
slash B, right?

09 06 50 12 CC Concur.

09 06 50 15 LMP Go ahead with batteries.

09 06 50 16 CC Batt A 26.7; correction, 27.6 for batt A. Batt B  
25.2, batt Charlie 39.5.

09 06 50 41 LMP 27.6, 25.2, 39.5.

09 06 50 44 CC Roger.

09 06 53 17 CC Apollo 7, Houston. One minute LOS; Ascension at  
12.

09 06 53 24 SC Right.  
ASCENSION (REV 141)

09 07 12 34 CC Apollo 7, Houston through Ascension. Standing by.

09 07 12 38 LMP Roger. Loud and clear.

09 07 12 40 CC Roger. The same.

09 07 16 55 CC 7, Houston.

09 07 16 58 LMP Go ahead.

09 07 17 00 CC Roger. Walt, you might be interested to know  
that when you were operating on the secondary  
loop there, the primary outlet temperature went  
down to about 9 to 10 degrees.

09 07 17 14 LMP Glycol evaporator outlet?

09 07 17 16 CC Negative. Your radiator outlet temperatures.

09 07 17 22 LMP Okay. The heaters didn't come on, though, huh?

09 07 17 27 CC Negative. Everything is operating normally now,  
though.

09 07 17 36 LMP Did it go down to plus 9 or 10, or minus?

09 07 17 39 CC Plus. Plus 9 or 10.

09 07 17 43 LMP Okay. No sweat. That's my fault, Ron. We were  
busy fiddling around here with the reentry plans,  
checking out the couch stuff.

09 07 17 51 CC Roger. I just thought, maybe, you'd be interested.

09 07 17 57 LMP Hear it's brisk.

09 07 17 59 CC It sure is.

09 07 18 03 LMP Do you have a copy of our canister card there?

09 07 18 08 CC Wait one, and I can pick it up.

09 07 18 10 LMP Okay.

09 07 18 56 CC 7, Houston. I have it now.

09 07 19 14 CC Apollo 7, Houston. I have your canister card now.

09 07 19 17 LMP Roger. We just did change number 19.

09 07 19 21 CC Roger.

09 07 19 24 LMP Which puts canister 21 in.

09 07 19 26 CC Roger. One more to go.

09 07 19 31 LMP And then they had it that way, but we'll do it.  
I think we'll put number 1 back in again and  
we're all done.

09 07 19 39 CC Roger.

09 07 19 44 LMP Both ... guys are getting along. We found we were  
out of a meal when we got all done today, too.

09 07 19 53 CC I see what you're saying.

09 07 20 05 LMP There's no crisis there. We're just thinking  
about it.

09 07 20 11 CC Roger.

09 07 20 39 CC Apollo 7, Houston. One minute LOS; Mercury at 50.

09 07 20 43 LMP Roger.

MERCURY (REV 141)

09 07 52 28 CC Apollo 7, Houston through Mercury.

09 07 52 33 SC Roger. I read you loud and clear.

09 07 52 36 CC Roger. The same. We have no data from Mercury  
this time.

09 07 52 41 SC Okay.

09 07 52 44 CC We'd like to delay switching to AB on the SPS  
line heaters until we acquire Guam.

09 07 52 54 SC What's wrong down there?  
GUAM (REV 141)

09 07 55 57 CC Apollo 7, Houston.

09 07 56 01 SC Go ahead - go ahead, Ron.

09 07 56 06 CC Roger. We're using the FM BIOMED channels for  
some special instrumentation that are different  
instrumentation. So we'd like to cycle the CRYO  
fans, tank 2 fans, once we acquire Guam. Now,  
I'll give you the go on it.

09 07 56 24 SC Roger.

09 07 58 40 SC Say, Ron, you have a map update for us?

09 07 58 44 CC Affirmative.

09 07 58 59 CC 7, are you ready to copy?

09 07 59 01 CDR Go.

09 07 59 03 CC Roger. REV 141 GET 233 plus 26 plus 34, longi-  
tude 21.7 east.

09 07 59 25 SC Ron, do you mean 223 or 233?

09 07 59 29 CC Roger. I mean 223 - 223.

09 07 59 35 SC That's a real up update?

09 07 59 38 CC Yes.

09 07 59 44 CT Fly D time we have a high rate data.  
09 07 59 48 CC ... we'll have that redone.  
09 07 59 53 CC Apollo 7, Houston. Request SPS line heaters to  
A/B and your temperature readout.  
09 08 00 02 SC Well, we were right there when you called for it,  
and I'm reading on my gage, for what it's worth,  
about, oh, 67.  
09 08 00 17 CC Roger.  
09 08 00 28 CC Walt, we're reading 65 down here, and we'll delay  
the CRYO tank fan cycle until Redstone. Not  
enough time, now.  
09 08 00 37 CDR Well, I can do it by myself, can't I?  
09 08 00 39 CC Negative. We'd like to get some - we've got  
some special readouts coming down on it. We'd  
like to pick it up over a station. Both the ON  
and the OFF cycle of the fans.  
09 08 00 48 CDR Okay.  
09 08 00 58 CC And, 7, I have a one-line flight plan update.  
09 08 01 03 CDR Go with it.  
09 08 01 04 CC Roger. At 224 plus 47, it's a down voice backup  
check over Ascension. We will command all switch-  
ing from the ground.  
09 08 01 21 CDR Roger. I'll stand by, then.  
09 08 01 24 CC Roger.  
09 08 01 53 CC Approaching AOS Redstone at 21.

## REDSTONE (REV 141)

09 08 22 02 CC Apollo 7, Houston through Redstone.

09 08 22 07 SC ...

09 08 22 08 CC Roger. ... we're waiting for data before we cycle the CRYO fans.

09 08 22 17 SC You say you're troubleshooting the switch on the backup?

09 08 22 25 CC This is part of it, but we're using the FM that we use to have the BIOMED on it, to get some more data.

09 08 22 34 SC Roger. We've got that ...

09 08 22 38 CC Roger.

09 08 22 39 CC Apollo 7, Houston. Opposite omni.

09 08 22 54 CC Apollo 7, Houston. Request O<sub>2</sub> tank 2 fan ON.

09 08 23 23 SC Roger. We have our ...

09 08 23 28 CC Roger. Twenty clicks for LMP.

09 08 23 45 SC ... 15 clicks?

09 08 23 48 CC Roger.

09 08 24 16 SC Say, Ron, we just went by the Tuamotu Archipelago out here, and for 4 minutes solid we went by coral reefs, atolls, I should say.

09 08 24 26 CC Roger.

09 08 24 30 SC That seems ... more than nothing at all.

09 08 24 34 CC Wow!

09 08 24 36 SC You should be locked up with him for 11 days.

09 08 24 40 CC That's right.

O 09 08 26 28 CC 7, Houston. I've got some football scores here.  
New York 20, Houston 14.

09 08 26 39 CDR Bad news.

09 08 26 41 CC Roger.

09 08 26 43 CDR Are you sure that's the correct score?

09 08 26 47 CC That's affirmed.

09 08 26 49 CDR Looks like New York had a good day.

09 08 26 51 CC Roger.

09 08 26 53 SC ... only gave me five points.

09 08 27 17 CC San Francisco was 26, New York 20; Cleveland 30,  
Baltimore 20; St. Louis 31, Washington 14;  
Chicago 29, Philadelphia 16; Green Bay 14 and  
Detroit 14.

⊖ 09 08 27 45 SC They are slowing down this year.

09 08 27 49 SC Jack.

09 08 27 50 SC What about the Rams?

09 08 28 26 CC Apollo 7, Houston. O<sub>2</sub> tank 2 fan OFF.

09 08 28 32 SC Roger.

09 08 29 29 CC 7, Houston. One minute LOS; Ascension 47.

09 08 29 39 SC Roger. What time Ascension?

09 08 29 44 CC At 47.

09 08 29 45 SC Roger.

09 08 30 29 CC 7, Houston. L.A. 27, Atlanta 14.  
ASCENSION (REV 142)

09 08 47 46 CC Apollo 7, Houston through Ascension.

09 08 47 54 LMP Roger. ...

C

09 08 47 57 CC Roger.

09 08 48 15 CC Apollo 7, Houston. Opposite omni.

09 08 48 41 CC Apollo 7, Houston. Voice check. You'll be coming down - down voice backup.

09 08 48 49 LMP Very well. Do you want me to configure now?

09 08 48 51 CC Negative. We have configured from the ground. All you have to do is talk.

09 08 48 58 LMP What am I here for?

09 08 49 00 CC (Laughter) Just talk.

09 08 49 05 LMP I'm testing down voice backup, and I wish I had those little command switches so I could throw my own.

09 08 49 11 CC Yes, right. That's a pretty good deal; all you punch is one button and it switches all those things.

09 08 49 16 CC Are you coming through?

09 08 49 17 LMP That's right. Ask them if they can rock their spacecraft down there, will you?

09 08 49 20 CC Okay. That down voice backup, that's good voice; nice and clear.

09 08 49 30 LMP Okay. Would you ask them to please switch my ranging back on and down voice back up to where they would like it?

09 08 49 40 CC Roger. Your ranging is still on.

09 08 49 44 LMP Thank you. You get better down voice without it.

09 08 49 48 CC Roger. We concur, but we want to test it this way, also. That's why we're checking this time now, Walt, is ranging down voice backup.

09 08 50 08 LMP Say that again.

09 08 50 09 CC Roger. We are checking down voice backup along with ranging on this test.

09 08 50 14 SC I understand, Ron.

09 08 50 21 CC By the way, L.A. beat Atlanta 27 to 14.

09 08 50 28 SC Roger. They're still undefeated then. Right?

09 08 50 34 CC I assume so. San Diego over Denver 41 to 17.

09 08 50 44 LMP Okay. I'm going to bed. Good night, Ron.

09 08 50 47 CC Roger. Good night. We'll see you tomorrow.

09 08 50 50 CMP Hello, there.

09 08 50 51 CC Hey, good morning.

09 08 51 06 CMP How did the Oilers do?

09 08 51 10 CC Not too well. They lost to New York 14 to 20.

09 08 51 20 CMP Oh.

09 08 51 29 CC Hey, Donn.

09 08 51 31 CMP Yeah, Ron.

09 08 51 33 CC Roger. You better check your food. Wally said he was one meal short there and not quite sure where he's going to get it so you better check your food and see if he's eaten yours.

09 08 52 42 CMP Yes, thanks for the tip. I'll be keeping an eye on him --

09 08 52 48 CC Okay. --

O 09 08 52 53 CMP I don't know what he did while I was asleep.  
 09 08 57 21 CC Apollo 7, Houston. One minute LOS. Mercury at 26.  
 09 08 57 27 CMP Roger. Mercury, 26.  
 MERCURY (REV 142)  
 09 09 26 27 CC Apollo 7, Houston through Mercury. Standing by.  
 09 09 26 32 SC Roger. Houston, Apollo 7.  
 09 09 26 35 CC Roger. Loud and clear.  
 09 09 27 25 CC Apollo 7, Houston. Opposite omni.  
 09 09 33 49 CC Apollo 7, Houston. Opposite omni.  
 09 09 33 51 SC Roger.  
 09 09 37 11 CC Apollo 7, Houston. One minute LOS; Redstone at 57.  
 09 09 37 18 SC Roger, understand.  
 09 09 37 20 CC Roger.  
 ⊖ REDSTONE (REV 142)  
 09 09 57 29 CC Apollo 7, Houston through Redstone.  
 09 09 57 34 LMP Roger. Houston, Apollo 7.  
 09 09 57 38 CC Roger. Loud and clear.  
 09 09 57 56 CC 7, Houston. We'd like to power up the CMC over  
 Redstone and then power down over Ascension.  
 09 09 58 05 LMP Okay. Fine.  
 09 10 01 57 CC Apollo 7, Houston.  
 09 10 02 07 SC Roger, Houston. Go.  
 09 10 02 10 CC Roger. We're just about due for a cycle on our  
 H<sub>2</sub> heaters, and we can finish this last CRYO H<sub>2</sub>  
 stratification test there if it's convenient for  
 you to turn the H<sub>2</sub> heaters and fans off at this time.

C

09 10 02 27 SC Roger. I can turn the heaters and fans off at this time.

09 10 02 31 CC Roger. Proceed and then this will start the H<sub>2</sub> CRYO stratification test.

09 10 02 37 SC All right. Fine. Starting at 26 02.

09 10 02 40 CC Roger.

09 10 03 04 CC 7, Houston. We read 233 psi in tank 1 - H<sub>2</sub> tank 1 and 231.3 in tank 2.

09 10 03 17 SC Roger. 233, 231. Thank you, Ron.

09 10 03 21 CC Roger.

09 10 03 30 LMP ... our meters read - well it's a little hard to resolve it that close - I'd say about 228 and 226 on our meter.

09 10 03 41 CC Roger. Copy.

09 10 03 44 LMP Looks like we're about 5 pounds below you.

09 10 05 48 CC Apollo 7, Houston. About 30 seconds LOS; Ascension at 23, and your state vector is good.

09 10 05 57 LMP Okay. Thank you.  
ASCENSION (REV 143)

09 10 25 04 CC Apollo 7, Houston through Ascension.

09 10 25 41 CC Apollo 7, Houston through Ascension.

09 10 25 46 CMP Roger. Houston, Apollo 7.

09 10 25 48 CC Roger. Read you, Donn.

09 10 25 51 CMP Roger.

09 10 26 02 CC 7, Houston. They verify SPS line heaters were turned off.

09 10 26 07      CMP      Negative. They were not turned off. Did you want them off now?

09 10 26 10      CC      Wait one; stand by.

09 10 26 38      CC      7, Houston. We were predicting that we would be up to 75 degrees here, but the curve tapered off, so we will advise when to turn them off.

09 10 26 47      CMP      Okay. I'm still reading 72 degrees right now.

09 10 26 52      CC      Roger. Concur.

09 10 26 54      CMP      Could you give me the hydrogen pressures again, please?

09 10 26 59      CC      Roger. Right now H<sub>2</sub> tank 1 232, H<sub>2</sub> tank 2 230.

09 10 27 10      CMP      Roger.

09 10 27 26      CC      And - Apollo 7, Houston - we're GO for CMC power down.

09 10 27 31      CMP      Okay.

09 10 28 43      CC      7, Houston. Have you ever taken the optics eye-pieces off and looked through the optics out there?

09 10 28 53      CMP      Have we taken them off, did you say?

09 10 28 54      CC      That's affirmative, or do you normally leave them mounted in position?

09 10 29 01      CMP      Oh, about fifty-fifty. Sometimes we put them away, and sometimes we just leave them there. It depends on what we're going to do; if we're going to be real active in the LEB doing other things, we usually put them away because they're in the way.

09 10 29 13 CC Roger. I've got a little degradation type thing I'll pass up to you here shortly.

09 10 29 20 CMP Okay. Fact is, they're stored right now.

09 10 29 24 CC Roger.

09 10 29 55 CC Apollo 7, Houston. You can turn the H<sub>2</sub> heaters on now, and that stratification test at your convenience.

09 10 30 02 CMP Okay. Heaters going on now.

09 10 30 04 CC Roger.

09 10 30 14 CC On this optics degradation, what we want to do is remove the sextant and telescope eyepieces, and then observe the internal lens of both the sextant and the telescope. This would be with your eyeball about a foot away from the panel during a dayside pass with the optics pointed somewhere above the horizon.

09 10 30 41 CMP Optics pointed where, above the horizon?

09 10 30 44 CC Optics above the horizon. And you should be able to observe some deposits on this objective lens similar to the ones that are on the windows.

09 10 31 02 CMP ... get through the optics eyepieces.

CANARY (REV 143)

09 10 31 13 CC Say again, Donn.

09 10 31 17 CMP I say with the eyepieces installed, the view - the optics are off through the telescope ... lifted off.

0 09 10 31 34 CC I still didn't copy that very well, Donn.  
09 10 31 38 CMP Just disregard.  
09 10 31 39 CC You're clear now; say again.  
09 10 31 42 CMP Okay. When the eyepiece is installed, the view through the optics will be as good now as it was at the start of flight.  
09 10 31 51 CC Roger. Understand. What we would like to do is get your evaluation with the eyepieces off and see if you can see any deposits on those lens off.  
09 10 32 00 CMP ...  
09 10 33 44 CC Apollo 7, Houston. Thirty seconds LOS; Mercury at 03.  
⊖ 09 10 33 50 CMP Roger, Houston.  
MERCURY (REV 143)  
09 11 03 10 CC Apollo 7, Houston through Mercury. Standing by.  
09 11 03 15 CMP Roger, Houston.  
09 11 03 18 CC Roger.  
09 11 05 04 CC Apollo 7, Houston. Opposite omni.  
09 11 05 09 CMP Roger.  
09 11 05 50 CC Apollo 7, Houston. SPS line heaters off.  
09 11 05 57 CMP Roger. Give me a couple of minutes.  
09 11 06 01 CC Roger.  
GUAM (REV 143)  
09 11 10 06 CC Apollo 7, Houston.  
C 09 11 10 17 CMP Roger. Go ahead, Ron.

09 11 10 18 CC Roger. On the H<sub>2</sub> pressures, we show 256 and 254.

09 11 10 27 CMP ... faded out; say again.

09 11 10 29 CC Roger. Your H<sub>2</sub> tank pressures, 256 and 254.

09 11 10 56 CC And - 7, Houston - our oxidizer line temperature now reads 80 down here.

09 11 11 20 CC 7, Houston. Thirty seconds LOS; Redstone at 32, and verify SPS line heaters off.

09 11 12 02 CC 7, Houston. Verify SPS line heaters off.  
REDSTONE (REV 143)

09 11 32 47 CC Apollo 7, Houston through Redstone. Standing by.

09 11 32 52 CMP Roger, Houston.

09 11 32 55 CC Roger.

09 11 33 12 CMP I completed that stratification test, and there doesn't appear to be anything.

09 11 33 19 CC Roger. Copy.

09 11 36 02 CC Apollo 7, Houston. I have a flight plan update when you're ready to copy.

09 11 36 10 CMP Okay. Ron, stand by for just one here.

09 11 36 12 CC Roger. No hurry.

09 11 38 12 CMP Go ahead with your flight plan update, Ron.

09 11 38 16 CC Roger. At 228 plus 20, optics degradation test. That's what we were talking about a while ago. At 229 plus 50, oxygen fuel cell purge; at 230 plus 00 02, CRYO stratification test number 3. We will advise further details later.

09 11 39 13 CMP Okay.

( 09 11 39 18 CC At 232 plus 00, extend playmate's sleep period to 234 plus 00.

09 11 39 36 CMP Roger. Got that.

09 11 39 39 CC Normal SPS burn prop ACCEPT. At 236 plus 00, dump waste water to blank percent - it's about 50 percent. We'll update that later.

09 11 40 10 CMP Okay.

09 11 40 11 CC We want to get the right amount to be in the tank for deorbit.

09 11 40 19 CMP Is there a right amount for deorbit?

09 11 40 20 CC That's affirmative. They're full, in other words, for deorbit. About 90 percent is what we're trying for.

← 09 11 40 27 CMP Oh, I see. Okay.

09 11 40 30 CC At 236 plus 50, backup GDC/IMU alignment; delete SCS backup align. At 237 plus 16, TV turnon.

09 11 41 12 CMP Ron, I don't see how that's going to work out too well. We're here - that's right in the middle of the pass that we're doing this alignment, and you've got to be darkened down from in here.

09 11 41 21 CC Wait a minute; I think I stated that wrong. That should be 237 plus 16.

09 11 41 28 CMP Yes, I see what you mean. Okay, Ron. But you may not get it because if we're not finished with that alignment, we're going to keep on with it.

(

09 11 41 37 CC Roger. It's just a passive TV pass anyhow.

09 11 41 41 CC Okay. Wait a minute. Was that the end of night period? Oh, I guess it is; my flight plan's a little low.

09 11 41 48 CC Yes, it was also there at CDR request.

09 11 41 56 CMP Right; I've got it here. Yes, that'll work out.

09 11 41 59 CC Okay. TV pass is 237 plus 18 to 237 plus 30.  
At 237 plus 30, oxygen fuel cell purge.

09 11 42 32 CC At 238.

09 11 42 34 CMP ... Ron.

09 11 42 37 CC Roger. We're about LOS; I'll pick you up at the Canaries at 03.

09 11 42 43 CC Okay.  
CANARY (REV 144)

09 12 05 22 CC Apollo 7, Houston through Canaries.

09 12 05 26 CMP Roger. This is Apollo 7.

09 12 05 28 CC Roger. Loud and clear, Donn. We can continue with the flight plan update, if you're ready.

09 12 05 36 CMP Go ahead.

09 12 05 38 CC Roger. Did you get the fuel cell O<sub>2</sub> purge at 237 plus 30?

09 12 05 54 CMP No. I'll start there.

09 12 06 04 CC Roger. At 237 plus 30, oxygen fuel cell purge.

09 12 06 14 CMP Okay. We just had one at 230.

09 12 06 17 CC That's affirmative. This is the one just prior to burn to make the fuel cell take more of the load.

09 12 06 23 CMP Oh, I see. Okay.

09 12 06 26 CC At 238 plus 30, delete Bravo prior Huntsville and Alfa prior Guam or Guaymas.

09 12 06 44 CMP ...

09 12 06 48 CC Roger. At 239 plus 06, present GETI burn 7.

09 12 07 01 CMP ...

09 12 17 03 CC Okay. I've got a change on that - on the one I gave up to you. At 230 plus 00, delete that CRYO stratification test.

09 12 07 22 CMP ...

09 12 07 25 CC Yes. Now it looks like the heat leak is such that the heat leak into the tanks is equal to the usage out, and the pressures are remaining constant now; so you can't do one.

09 12 07 45 CMP (Laughter) Oh, okay.

09 12 07 47 CC Roger. And one thing I wanted to make clear at 236 plus 50 - -

09 12 08 00 CMP Yes.

09 12 08 01 CC Roger. That's a backup GDC alignment, and the IMU is not to be caged. It's an alignment test.

09 12 08 10 CMP Right. We'll leave the IMU in their zone, probably fly back to it.

09 12 08 16 CC Roger. A little advanced information: looks like you only have about 12 to 13 minutes to get those stars in there, and we plan to pass up some information for a local vertical attitude and kind of an AOS time at the stars.

09 12 08 37 CMP Oh, okay, fine. That will help. Why do you say that we've only got 12 or 13 minutes?

09 12 08 46 CC That's the only time the stars will be in the field of view.

09 12 08 52 CMP Oh, swell.

09 12 08 58 CC And they'll start going under the horizon after that time.

09 12 09 02 CMP Oh, that's not such a hot deal, is it? This is supposed to be our backup alignment method. If we've only got 12 minutes per night pass to find them, that's kind of a difficult thing to do if you don't have help.

09 12 09 16 CC Roger. We understand. That's the best we can do at this setting, though.

09 12 09 21 SC Oh, it looks like a poor choice of stars.

09 12 09 29 CC I copied that.

09 12 09 39 SC Yes, that's interesting. I noticed during the curious night pass that the other cross was just barely above the horizon, and that was only for a few minutes, and then it started going down.

09 12 09 52 CC Roger.

09 12 10 02 CC 7, Houston. We could use a kind of a crew status report there on yourself if you've got a chance.

09 12 10 10 CMP Roger. I'm still holding up. Had a real good night's sleep - a good 8 hours, I guess - and my cold seems better; at least, I'm not blowing

my nose as much, and my ears stay clear more than a greater proportion of the time than they were earlier.

09 12 10 28 CC Yes, that sounds real good.

09 12 10 31 CMP I don't know whether Wally and Walter's have improved or not; I don't think they have, to speak of. I took one Lomatil before I went to sleep. That was around - well, whenever it was that I went to sleep.

09 12 10 49 CC Roger.

09 12 10 55 CMP I took it about 215 or 216.

09 12 11 06 CC What was that - 215 or - oh, that was the time. Okay.

09 12 11 09 CMP About that, 215 hours or thereabouts.

09 12 11 12 CC Roger.

09 12 11 13 CMP And I haven't kept too close a track of the water; I think it's been around 20 or 30 clicks.

09 12 11 20 CC Roger.

09 12 11 21 CMP A combination of before I went to sleep and then after I got up.

09 12 12 04 CC About 30 seconds LOS at Canaries; we've got Madrid for about 1 minute.

09 12 12 13 CMP Roger.

09 12 12 17 CC It will be Redstone at 08.

09 12 12 22 CMP Roger. Redstone at 08.

REDSTONE (REV 144)

09 13 08 08 CC Apollo 7, Houston through Redstone. Standing by.

09 13 08 13 CMP Roger, Houston.

09 13 08 15 CC Roger. Loud and clear.

09 13 10 07 CMP Houston, Apollo 7.

09 13 10 09 CC Houston. Go.

09 13 10 11 CMP I looked through the optics, and I couldn't tell much in the way of dirt in there. The sextant looked clean as a whistle. There were some little light spots in the telescope which could be dirt particles catching light, you know, reflecting.

09 13 10 28 CC Roger. But you didn't see anything that looks like the command module windows?

09 13 10 33 CMP That looked like what?

09 13 10 35 CC Any of the deposits we have on the command module windows.

09 13 10 41 CMP No, I couldn't tell anything like that. You mean on the surface - the inner surface of the - next to the spacecraft, or are you looking through the whole thing?

09 13 10 49 CC Well, looking through the whole thing and also on the inner surface anywhere that you can see.

09 13 10 55 CMP No, I didn't see anything like that - that looked like our window degradation at all.

09 13 11 00 CC Roger. Copied.

○ 09 13 11 02 CMP They were clean as a whistle except for the little specks on the telescope which do not apparently affect the field of view when you've got the eye-piece in.

09 13 11 15 CC Roger. Sounds good then.

09 13 11 19 CMP Yes, I haven't noticed any change at all in the way the stars look or the ground looks from the day we took off.

09 13 11 26 CC Roger.

09 13 11 30 CMP In fact, on some of the flights, I'd like to suggest they rig up some type of a deal where you could mount a camera on there and take pictures through it. It's an excellent window for that kind of thing.

⊖

09 13 11 42 CC Roger.

09 13 12 57 CC Apollo 7, Houston.

09 13 13 01 CMP Go ahead.

09 13 13 02 CC Roger. I've got about three flight planning questions here on the completion of things.

09 13 13 11 CMP Okay. Go ahead.

09 13 13 13 CC Roger. Has a second sextant calibration test been performed?

09 13 13 20 CMP No, we haven't done that.

09 13 13 23 CC Roger, and -

09 13 13 26 CMP I guess the first one didn't come out too well. I mean, I only got one star.

○

09 13 13 34 CC Roger. And how about the optics calibration test? Have two of those been performed?

09 13 13 48 CMP Don't know what that is. You mean the COAS calibration?

09 13 13 57 CC No, that's the first part of P23. It's that trunnion bias check thing.

09 13 14 07 CMP Oh, yes. No, I did that the same time I did the sextant calibration.

09 13 14 14 CC Roger. And how about the window photography as described in the DTO S-20.16?

09 13 14 27 CMP I haven't taken any pictures. I think Walt and Wally have taken some along the way. I don't know if we did it exactly to that DTO, but I think we got most of it.

09 13 14 38 CC Roger. I understand. And - 7, Houston - opposite omni.

09 13 14 44 CMP Roger.

09 13 16 28 CC Apollo 7, Houston. Opposite omni again, please.

09 13 18 00 CC Apollo 7, Houston. One minute LOS; Antigua at 27.

09 13 18 07 CMP Roger.  
ANTIGUA (REV 145)

09 13 28 16 CC Apollo 7, Houston through Antigua. Standing by.

09 13 28 19 CMP Roger.

09 13 36 42 CC Apollo 7, Houston. One minute LOS, Antigua; Canaries at 38.

09 13 36 48 CMP Roger. Good morning.

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0 09 13 36 49 CC Good morning, and goodbye. We'll see you tomorrow,  
Donn.

09 13 36 54 CMP Oh, okay, Ron. Have a good day.

09 13 36 57 CC Roger.

09 13 36 59 CMP Good night, or whatever it is.  
CANARY (REV 145)

09 13 39 07 CC Apollo 7, Houston through Canary. Standing by.

09 13 39 17 CMP Roger, Bill.

09 13 43 47 CC Apollo 7, Houston. Opposite omni, please.

09 13 46 40 CC Apollo 7, Houston. Coming up on LOS Canaries in  
about one and a half minutes; approximately one  
more minute of calm after that if you turn your  
S-band volume up at Madrid.

⊖ 09 13 46 51 CMP Roger.  
MADRID (REV 145)

09 13 48 54 CC Apollo 7, Houston. One minute LOS Madrid; Carnar-  
von at 17.  
CARNARVON (REV 145)

09 14 17 44 CC Apollo 7, Houston through Carnarvon.

09 14 17 49 CMP Roger, Houston.

09 14 17 51 CC Hi, Donn. Would just like to confirm a fuel cell  
O<sub>2</sub> purge.

09 14 18 00 CMP Roger. That is in work.

09 14 18 01 CC Thank you. And I have a block data to pass up.  
This is a fairly brief pass here at Carnarvon.  
I'll get you at Honeysuckle at 24 and require  
S-band volume up at that time.

○

09 14 18 19 CMP Okay.

09 14 19 16 CMP Bill.

09 14 19 17 CC Roger. Go.

09 14 19 19 CMP Could you give me a map update, please?

09 14 19 21 CC Roger. Have one right here. For REV 146 GET  
232 plus 28 plus 05, 116.8 west.

09 14 19 49 CMP Roger. The time was 232 plus 38, was that it?

09 14 19 52 CC Plus 28.

09 14 19 55 CMP 28. All right. Thank you.

09 14 19 56 CC Right.

HONEYSUCKLE (REV 145)

09 14 25 31 CC Apollo 7, Houston through Honeysuckle.

09 14 25 38 CMP Roger, Houston.

09 14 25 40 CC And I do have this block data ready whenever you  
are ready to copy.

09 14 25 45 CMP Okay.

09 14 26 07 CMP Go ahead, Bill.

09 14 26 09 CC Roger. Block data: 147 dash 1 Bravo plus 263  
minus 0630 232 plus 09 plus 47 4102, 148 dash 1  
Alfa plus 299 minus 0645 233 plus 46 plus 42  
3550, 149 dash 1 Alfa plus 293 minus 0644 235  
plus 25 plus 39 3075, 150 dash 1 Alfa plus 237  
minus 0630 237 plus 07 plus 05 2811, 151 dash 4  
Alfa plus 294 minus 1615 239 plus 48 plus 35 3073,  
152 dash 4 Alfa plus 298 minus 1615 241 plus 29  
plus 11 2839. Standing by for readback.

09 14 28 40 CMP Roger. Can you give me that last one over, please?  
The time ...

09 14 29 46 CC Roger. 241 plus 29 plus 11.

09 14 29 17 CMP Okay. 147 dash 1 Bravo plus 263 minus 0630 232  
09 47 4102, 148 plus 299 minus 0645 233 46 42  
3550, 149 plus 293 minus 0644 235 25 39 3075,  
150 plus 237 minus 0630 237 07 05 2811, 151 plus  
294 plus - minus 1615 239 48 35 3073, 152 plus  
298 minus 1615 241 29 11 2839.

09 14 30 16 CC Readback is correct.

09 14 30 52 CC Apollo 7, Houston. Coming up on LOS Honeysuckle;  
Redstone at 43.

09 14 30 59 CMP Roger.  
REDSTONE (REV 145)

09 14 44 05 CC Apollo 7, Houston through Redstone. Standing by.

09 14 44 31 CMP Roger. Houston, Apollo 7.

09 14 44 33 CC Roger.

09 14 50 35 CC Apollo 7, Houston. Opposite omni, please.

09 14 53 00 CC Apollo 7, Houston. One minute until LOS Red-  
stone; Antigua at 02.

09 14 53 07 CMP Roger.  
ANTIGUA through BERMUDA (REV 146)

09 15 02 49 CC Apollo 7, Houston through Antigua.

09 15 03 55 CC Apollo 7, Houston.

09 15 04 07 CMP Roger.

09 15 04 09 CC I have a couple of things to discuss here, Donn,  
to put into the flight plan for flight plan update.

09 15 04 45 CMP Oh, okay. Go ahead.

09 15 04 47 CC Right. First item: we propose to dump waste  
water at 236 plus 50 - excuse me, 235 plus 50.  
That will be at the end of a night pass, and this  
will allow plenty of time for the stuff to disperse  
before the next night pass. And also, we'll be  
timed to give us the proper quantity for reentry.  
Now at 235 plus 50, we'd like to dump to 40 per-  
cent waste quantity, and we would like to get  
pretty close to that number if possible because  
this is going to insure us of the right quantity  
remaining at time for reentry.

09 15 05 44 CMP Okay.

09 15 05 48 CC So I gave you a wrong number there. I corrected  
it, but to make sure: at 235 plus 50, dump to  
40 percent.

?? ?? ?? ?? SC Roger. I've got it. At 235 plus 50, dump tape.

?? ?? ?? ?? CC Also, second item for information, we're looking  
at north set stars, and the analysis now is  
favorable. We'll have the information soon,  
that is if the crew wants the information.

?? ?? ?? ?? SC I see. We could use the north set stars if we  
had to do a real backup alignment.

09 15 06 27 CC Affirmative.

09 15 06 29      CMP      All right. We'll take them if you've got them.

09 15 06 39      CC      Yes, Donn, that is correct. You could use them  
for a backup alignment. They will be visible  
longer, but the primary reason for looking those  
things up was to have two stars that would be  
visible for a longer period of time for doing  
this test.

09 15 06 55      CMP      Oh, I see. You're saying you want to use two  
other stars for the test.

09 15 07 01      CC      That's affirmative. We're proposing that - or  
at least, we're prepared to provide you with  
that information. Let me put it that way.

09 15 07 10      CMP      In coming in, are we going to end up with the  
same - in other words when we fly back to null  
on our GDC ball, that will be the same as when  
we bring it up for the burn?

09 15 07 22      CC      Affirmative.

09 15 07 25      CMP      All right. Well, I don't care. It really  
doesn't make that much difference. We're  
trained on the south end stars.

09 15 07 35      CC      Okay. Well, I had - we had understood there was  
some reason to be worried about those because  
they wouldn't be visible long enough. These two  
stars that we have will be Navi and Polaris,  
stars 3 and 5. And they should - they will be  
visible for a longer period of time. That is  
why they went to work and got this information.

09 15 07 59 CMP Oh, I see.

09 15 08 08 CC They are still looking, trying to find out exactly what the periods are for the - that is the periods of visibility and then the duration of the time they will be visible.

09 15 08 19 CMP Yes, that may not be a problem. Actually, if you gave us the pitch, roll, and yaw align, we can just put those numbers on the IMU ball, and that ought to put the south end of the right position.

09 15 08 36 CC Okay. The way I understood it was that because of the geometry of the orbit and the daylight problem, they would be visible for short periods of time. However, we'll just sort of hang loose on this for right now.

09 15 08 53 CMP Well, Ron said that they would be visible about 12 minutes. Twelve minutes would be plenty if you've got them right in the telescope to start with.

09 15 09 02 CC Copy.

09 15 09 03 CMP That may not be enough.

09 15 09 06 CC Okay. We'll stand by. We have that information available.

09 15 09 09 CMP Good. I prefer to use the south end stars if we can, because we trained on that a little more, and we know what we're doing, I think.

09 15 09 17 CC Okay. Fine. Request opposite omni, please.

09 15 09 22 CMP Okay.

CANARY (REV 146)

09 15 13 52 CC Apollo 7, Houston. Coming up on - stand by.

09 15 15 03 CC Apollo 7, Houston through Canary. Standing by.

09 15 16 59 CC Apollo 7, Houston. Opposite omni, please.

09 15 22 11 CC Apollo 7, Houston. One minute LOS Canary; volume  
up at 23 for 1 minute more at Madrid; Carnarvon  
at 50.

09 15 22 24 CMP Houston, Apollo 7.

09 15 22 40 CC Apollo 7, Houston. Did you read?

09 15 22 44 CMP Roger, Bill. I got you.

09 15 22 45 CC Okay. Thank you.

CARNARVON (REV 146)

09 15 50 10 CC Apollo 7, Houston through Carnarvon. Standing  
by.

09 15 50 14 CMP Roger. Houston, Apollo 7.

09 15 50 19 CC Roger.

09 15 55 36 CC Apollo 7, Houston. Opposite omni, please.

09 15 55 40 CMP Roger.

HONEYSUCKLE (REV 146)

09 16 00 07 CC Apollo 7, Houston through Honeysuckle. Stand-  
ing by.

09 16 06 22 CC Apollo 7, Houston. One minute LOS Honeysuckle;  
Texas at 32.

## TEXAS through ANTIGUA (REV 146)

09 16 32 24 CC Apollo 7, Houston through Texas. Standing by.

09 16 32 29 CMP Roger, Houston.

09 16 33 09 CMP Houston, Apollo 7.

09 16 33 11 CC Apollo 7, Houston.

09 16 33 13 CMP Hey, Bill, I took a look at that south set star and those two stars, and you're right; they're not much good, but then the cross went out of sight in about oh, I guess 6 to 8 minutes.

09 16 33 30 CC Roger.

09 16 33 32 CMP So I think we better go with the north side if we can get them.

09 16 33 36 CC Okay. I'll start working on it right now.

## TEXAS through ANTIGUA (REV 147)

09 16 35 23 CC Apollo 7, Houston.

09 16 35 25 CMP Roger. Go.

09 16 35 27 CC Right. On this procedure (page 33 on the checklist) - that's on this backup alignment - the two stars will be Navi, star number 3 instead of Acrux; and Polaris, number 5 instead of Atria.

09 16 35 53 CMP Okay. Stand by, and I'll get that written down here.

09 16 35 57 CC Okay. And the procedure, of course, will remain the same.

09 16 36 47 CMP Okay, Bill. I got it. The way it reads now - maneuver the stars Navi number 3 on the 50-degree mark and Polaris number 5 on the R line.

09 16 37 00 CC That's correct, and, of course, you have all the information written in there if we can go either way now depending upon the situation. But since you made the change, we'll assume now that we are sending all of our information up the north set stars.

09 16 37 16 CMP Right. I'd like to do that.

09 16 37 18 CC Okay. Apollo 7, Houston. You're GO for 164 dash 1.

09 16 37 26 CMP Roger.

09 16 46 20 CC Apollo 7, Houston. One minute LOS Antigua; Canaries at 50.

09 16 46 26 CMP Roger.  
CANARY (REV 147)

09 16 50 58 CC Apollo 7, Houston through Canaries. Standing by.

09 16 52 03 SC Roger, Bill.

09 16 52 38 SC Houston, Apollo 7.

09 16 52 40 CC Apollo 7, Houston. Go.

09 16 52 42 LMP Roger. I just got a fast alarm, and a fuel cell 3 light came on. However, all cockpit meter indications are indicating NORMAL.

09 16 52 52 CC Roger. We're looking.

09 16 53 51 CC Apollo 7, Houston.

09 16 53 53 LMP Go.

09 16 53 54 CC Roger. We've been watching it for some time. The condenser exhaust temperature has been dropping

down; there's nothing to worry about; it'll come back up as soon as you power up. Apparently, this has been a slow trend they've been monitoring from the ground.

09 16 54 13 LMP Oh, I see now. Ours has dropped below the green bank; I've got 155 here.

09 16 54 20 CC 155. Roger.

09 16 54 22 LMP Okay. We'll use batteries and compute it as usual and figure it'll come back up when we power up.

09 16 54 27 CC That's affirmative. And you still have a fuel cell 3 light?

09 16 54 34 LMP Roger.

09 16 55 35 SC Houston, Apollo 7.

09 16 55 37 CC Apollo 7, Houston.

09 16 55 40 LMP Roger. We have a number 3 that tends to run cool, and number 2 tends to run hot. Number 2 is carrying a little more load than the others that's on both bus. What do you people think of swapping; in other words, put three on both buses and two on 2 only?

09 16 55 57 CC Roger. Stand by.

09 16 56 02 CC Apollo 7, Houston. We're talking that over; we'll get it to you at Carnarvon.

09 16 56 07 LMP Roger.

09 16 57 26 CC Apollo 7, Houston. One minute LOS Canary; Carnarvon at 25. We'd like to have POO in ACCEPT for

Carnarvon acquisition; we'll give you a state vector and a target load.

09 16 57 39 LMP Righto. I'll have it.

09 16 57 41 CC Thank you.

CARNARVON (REV 147)

09 17 25 33 CC Apollo 7, Houston through Carnarvon.

09 17 25 37 CMP Roger.

09 17 26 47 CC Apollo 7, Houston. I have the maneuver PAD when you're ready to copy.

09 17 26 56 CMP I'm ready. Go ahead.

09 17 26 57 CC Roger. SPS number 7, 239 06 1100 minus 00000 minus 01 000 minus 02020. Donn, could you go to ACCEPT, please?

09 17 27 38 CMP You've got it.

09 17 27 39 CC Roger. Continuing to read with NOUN 42: 2303 plus 0901 02083 24647 minus 073 minus 131 008 05 2831 276 238 24 0000 minus 0942 plus 13557 2307; roll, pitch, and yaw all zeros. Standing by for readback.

09 17 27 59 CMP Roger. I got the SPS burn number 7, 239 06 1100 minus all balls minus 01 000 minus 02020 2303 plus 0901 02083 24647 minus 073 minus 131 008 05 2831 276 238 24 0000 minus 0942 plus 13557 2307 all balls.

09 17 28 49 CC Right. You faded out. In NOUN 42 up there, for the apogee height, 2303.

09 17 28 59 CMP Roger. 2303.

09 17 29 01 CC Okay. And comments: SCS AUTO with SPS, out of point north, pitched up 70 degrees. And also in the comments section, I have the backup align information.

09 17 29 29 CMP Okay. Pitched up 70 degrees. Is that what you got?

09 17 29 31 CC Affirmative. Out of plane north, pitched up 70 degrees.

09 17 29 39 CMP Right and heads up. That is a backup?

09 17 29 46 CC Affirmative. That's right. It is heads up.

09 17 29 52 CMP Go ahead and give your backup angles now, Bill.

09 17 29 54 CC Right. For the backup alignment: roll 035, pitch 003, yaw 006. Comments: backup align stars are north set, both stars available after 5 minutes in darkness.

09 17 30 26 CMP Okay. Roll 035, pitch 003, yaw 006, north set, 5 minutes after darkness.

09 17 30 34 CC Affirmative. Readback is correct.

09 17 30 46 CMP I understand. These are the angles that when we're in position with the north set stars and we fly back to NULL on the GET, we'll also be at NULL on the INE pole.

09 17 30 56 CC That's affirmative. That's the way I understand it.

09 17 30 59 CMP Okay. That ought to do it.

09 17 31 00 CC Donn, before you put your pad away, would you confirm in NOUN 42 the C - 02083?

09 17 31 09 CMP Roger. 02083; got it.

09 17 31 12 CC Thank you. Readback is correct.

09 17 31 14 CMP Okay. Thank you, Bill.

09 17 31 18 CC Okay. Donn, it's your computer.

09 17 31 22 CMP Okay.

09 17 31 23 CC Both loads are in.

09 17 31 44 CC Apollo 7, Houston. Opposite omni, please.

09 17 34 00 CC Apollo 7, Houston. Coming up on Carnarvon LOS. S-band volume up at Honeysuckle which will be about a half minute from now.

09 17 34 12 CMP Okay, Bill.

HONEYSUCKLE (REV 147)

09 17 36 35 CC Apollo 7, Houston. Opposite omni, please.

09 17 36 46 SC Roger.

09 17 36 49 CC Go.

09 17 36 56 CC Apollo 7, Houston. Go.

09 17 37 03 CMP Nothing, Bill. I was just responding to your call there.

09 17 37 06 CC I'm sorry.

09 17 37 09 CMP No sweat.

09 17 41 44 CC Apollo 7, Houston. Approximately 1 minute LOS Honeysuckle; Guaymas at 04.

HUNTSVILLE (REV 147)

09 18 02 18 CT Huntsville AOS.

09 18 02 38 CC Apollo 7, Houston through Huntsville.  
09 18 03 37 CT Huntsville LOS.  
GUAYMAS through ANTIGUA (REV 147)  
09 18 04 21 CC Apollo 7, Houston through Guaymas. Standing by.  
09 18 04 25 CMP Roger.  
GUAYMAS through ANTIGUA (REV 148)  
09 18 13 22 CC Apollo 7, Houston.  
09 18 13 27 CMP Go.  
09 18 13 29 CC Hey, Donn, monitor your yaw. We show a slow  
drift over toward 270.  
09 18 13 41 CMP Roger. I'm keeping an eye on it.  
09 18 13 44 CC Okay.  
09 18 13 45 CMP I'm hoping that the pitch and yaw ... so we don't  
quite get over there.  
09 18 13 49 CC Okay. We'll keep an eye on it here; we have a  
long pass.  
09 18 13 52 CMP Okay.  
09 18 19 50 CC Very good.  
09 18 19 55 SC Okay. Took P52 using Rigel and Aldebaran ...  
Oh, you guys are reading this, right?  
09 18 21 56 CC Apollo 7, Houston. One minute LOS Antigua;  
Ascension - Canaries, rather, at 26.  
09 18 22 05 LMP Roger. Bill, we'd like to finish this fine  
align check.  
09 18 22 12 CC All right.

## CANARY (REV 148)

09 18 26 44 CC Apollo 7, Houston through Canary. Standing by.

09 18 26 48 CMP Roger.

09 18 28 52 CMP Go ahead.

09 18 30 44 CC Apollo 7, Houston. We're monitoring about  
75 degrees in yaw.

09 18 30 51 CMP Roger. Thanks, Bill. I just caught it. I was  
hoping I could get away without firing the yaw,  
but I had to.

09 18 31 00 CC Roger.

09 18 31 11 LMP Hey, Bill. We have lost downlink, and you didn't  
give the tape back that last time. I did the fine  
align check; I used Sirius and Rigel. I got five  
balls starting with Eperus, got plus four balls 8,  
plus three balls 24, minus four balls 3 for the  
torquing angles in the fine align check.

09 18 31 33 CC What were the last two on the fine align check?

09 18 31 38 LMP Plus four balls 24 and minus four balls 3.

09 18 31 43 CC Roger.

09 18 33 13 CC Apollo 7, Houston. Coming up on LOS; Tananarive  
at 46, and Carnarvon on the hour.

09 18 33 22 SC Roger. We'll see you then.

09 18 33 25 CC Roger.

CARNARVON (REV 148)

09 19 00 53 CC Apollo 7, Houston through Carnarvon.

09 19 00 57 CMP Hello there.

09 19 00 59 CC Hello. Do you have a residual from your EMS DELTA-V test?

09 19 01 07 CMP No, haven't done it yet, but I imagine it's 21.6 like it always is.

09 19 01 12 CC Okay. And, Donn, just for the record, did you get the canister change?

09 19 01 33 CMP Negative. We'll get that.

09 19 01 36 CC Okay. No sweat.

09 19 01 42 CDR Good morning, Bill.

09 19 01 44 CC Good morning.

09 19 01 46 CDR Hey, this is Wally. I'd like you to have the surgeon give us some dope on Actifed. We're not sure whether my symptoms with it are right or not, but my mucous thickened up and tended to dry up a little bit. It got a lot thicker as a result of treating myself with Actifed. Does it dry up the nostrils and the sinus, or does it just sort of thicken it up?

09 19 02 11 CC Stand by. The surgeon is nodding his head and said that's a common response.

09 19 02 20 CDR That it thickens the mucous?

09 19 02 22 CC It thickens it and also maybe dries up your nose.

09 19 02 28 CDR How about your sinuses? Will it dry up your sinus?

09 19 02 33 CC It shrinks them down.

09 19 02 37 CDR Does, eh?

09 19 02 38 CC Roger.

09 19 02 40 CDR Well, let's make our point. We're about ready to start on Actifed about every 8 hours, right up to retro, and we're just not sure if it's a smart move or not.

09 19 02 50 CC It - as far as the surgeon is concerned, it's a recommended procedure.

09 19 02 56 CDR Roger. We'll go that way.

09 19 02 58 CC Okay.

09 19 04 28 CMP Hey, Bill.

09 19 04 29 CC Roger.

09 19 04 33 CMP We've tried and tried since last night to find out how we're going to change canisters 22 times, when we only started with 22 canisters including the two in the lithium hydroxide canister.

09 19 04 47 CC Okay. I had originally designed that thing; I'll explain it to you later.

09 19 04 54 CMP Well, for change number 21, we can put can number 1 back; but for 22, it leaves me cold.

09 19 05 03 CC Okay.

09 19 05 07 CDR I think we'd better go back to the drawing boards for that one, Bill.

09 19 05 12 CC No comment.

09 19 05 25 CMP Our point here, Bill, is maybe we had better not change this one now. If we just stretch these out - none of them have gone very far - we're

less than about one-tenth of a millimeter right now. If we stretch this one out and move the next one back a little bit, we've got them through the flight, I think.

09 19 05 39 CC Roger. I see what you're saying. I agree.

09 19 05 42 CDR What he's saying - in 101, we should at least try for a silly millimeter longer.

09 19 05 46 CC Oh, boy.

09 19 05 50 LMP That's two for you.

09 19 05 52 CMP Bill, I told you to get us a new writer.

09 19 06 02 CC Thought you were setting me up there the other night. I'm afraid to say anything anymore.

09 19 06 07 SC (Laughing) Yes.

09 19 08 08 LMP Hey, Bill. Happiness is a package of bacon squares on day 10.

09 19 08 13 CC Roger. Sounds like you have quite a few useful comments on the food there; I've been reading the notes.

09 19 08 23 CMP You ought to see what we've written.

09 19 08 26 CDR How do they spell "blacch"?

09 19 08 35 CC Check with Sparkey Schultz, there.

09 19 08 51 CC We think you ought to look that one up in your Funk and Wagnalls.

09 19 08 59 LMP We'll bridge the gap.

09 19 09 30 CC Apollo 7, Houston. LOS Carnarvon in 1 minute; S-band volume up at that time for Honeysuckle.

09 19 09 37 CDR Okeydoke.  
HONEYSUCKLE (REV 148)

09 19 12 02 CC Apollo 7, Houston. Opposite omni, please.

09 19 12 43 CC Apollo 7, Houston. Opposite omni again, please.

09 19 12 59 CDR Houston, did you call S-band?

09 19 13 01 CC Roger. Opposite omni.

09 19 13 03 CDR Roger.

09 19 17 13 CC Apollo 7, Houston. Coming up on Honeysuckle  
LOS; Hawaii at 29.

HAWAII through BERMUDA (REV 148)

09 19 30 59 CC Apollo 7, Houston through Hawaii. Standing by.

09 19 31 03 SC Aloha.

09 19 37 41 CC Apollo 7, Houston.

09 19 37 48 SC Roger. Go.

09 19 37 50 CC Right. Just by way of a reminder, we'd like to  
remind you that when in DAP control, we'd like  
all channels ENABLED, and DAP loaded to fail  
quads Alfa and Bravo to save some fuel on these  
two quads.

09 19 38 15 CMP I understand that about the DAP load. What did  
you say before the DAP load?

09 19 38 22 CC Just as a reminder.

09 19 38 26 CMP Okay. If it was only the DAP load, we are aware.  
Thank you very much.

09 19 38 29 CC Right. Thank you.

09 19 38 32 LMP It is our intention not to change - make canister change 22 in the flight plan until about 40 hours, unless CO<sub>2</sub> partial pressure dictates otherwise.

09 19 38 44 CC Roger.

09 19 39 20 LMP Houston, Apollo 7.

09 19 39 22 CC Apollo 7, Houston. Go.

09 19 39 24 LMP Roger. You're coming in a lot better now. It's our intention not to make canister change number 22 as called out in the flight plan until about 40 hours.

09 19 39 33 CC Roger. Understand.

09 19 39 34 LMP And that - unless CO<sub>2</sub> partial pressure goes up, we'll make canister change number - I guess it's 23. We will make 21 at about 40 hours. We'll make canister change 22 at about 50 hours. And we will put canister number 1 back in - canister number 2 back in then.

09 19 39 51 CC Okay. I understand. That's okay.

09 19 39 55 LMP We'll put the canister back in that we took out first, whatever it was.

09 19 39 59 CC Right. I understand what you're saying.

09 19 40 18 CMP Houston, Apollo 7.

09 19 41 20 CC Apollo 7, Houston. Go.

09 19 41 22 CMP Roger. We're in the process of doing this backup alignment. I've got as far as getting the stars where they should be and aligning the GDC. We're

now flying back to three zeros on the ball. Let's check our error against the IMJ.

09 19 41 36 CC Roger.

09 19 44 03 LMP Houston, Apollo 7.

09 19 44 06 CC Apollo 7, Houston.

09 19 44 08 CMP I'd like to record a comment concerning the optics quality of the telescope.

09 19 44 13 CC Roger.

09 19 44 14 CMP We focus very sharply on the reticle pattern and on stars and so forth in the center of the telescope. As you get out toward the edge of it, the fringe area, it gets a distortion, and you get some fuzziness; this makes it very difficult to pick up stars out on the edge of it. Reminds me of a cheap pair of binoculars that you might get at Sears on sale or something.

09 19 44 40 CC Roger.

HAWAII through BERMUDA (REV 149)

09 19 45 59 CC Apollo 7, Houston.

09 19 46 01 CMP Are you - you're getting our DSKY on the downlink, are you?

09 19 46 04 CC Affirmative.

09 19 46 05 CMP Okay. Those numbers you see are the errors in this procedure. Looks pretty good to me.

09 19 46 19 CC You can't argue with that.

09 19 46 21 CDR Let's argue. To make the point a little plainer, the attitude set thumbwheels are also included in this summation of errors because all I did was set in nine balls to fly the GDC error needle to NULL. So the bias from that is also included.

09 19 46 38 CC I understand.

09 19 46 39 CDR Roger.

09 19 49 14 CMP Hey, Bill, do you have a map update for us? One that's on this rev, say?

09 19 49 19 CC Stand by. We have REV 149, time is 236 plus 58 plus 44, 173.9 degrees east.

09 19 49 48 LMP Roger.

09 19 50 38 CC Apollo 7, Houston. Also like to remind you about the waste water dump scheduled at 235 plus 50.

09 19 50 48 LMP Wilco.

09 19 52 52 LMP Houston, Apollo 7.

09 19 52 53 CC Apollo 7, Houston. Go.

09 19 52 55 LMP We show water dump down to 40 percent. I assume that 40 percent guarantees us we won't have to dump anymore before reentry. We can restow our attachment? Over.

09 19 53 08 CC Okay. That is using the figures they have been able to determine on the flight; that's correct.

09 19 53 17 LMP And we'll end up with how much of the waste water tank then at 250 hours?

09 19 53 21 CC About 90 percent.

09 19 53 23 LMP Okay.

09 19 53 25 CC You got a little - -

09 19 53 26 LMP We're going to restow this thing. This is going to be our last dump.

09 19 53 29 CMP What if we go an extra 3 hours, what would happen?

09 19 53 34 CC Stand by.

09 19 53 38 LMP We won't worry about that.

09 19 53 39 CDR This is kind of academic; we're worried about a trickle flow through the urine dump, that's all.

09 19 53 44 CC Okay.

09 19 53 45 CDR So we're not worried. We'll make this dump, and that's it.

09 19 53 48 CC All right.

09 19 56 32 LMP Houston, Apollo 7.

09 19 56 34 CC Apollo 7, Houston. Go.

09 19 56 36 LMP Through with downlink now. Do you show the cabin pressure holding steady? We've got an O<sub>2</sub> FLOW HI on, and I think - it looks to me like the cabin pressure might be falling a little bit.

09 19 56 47 CC Cabin pressure's holding pretty constant here. I've been looking at it, but stand by.

09 19 57 14 CC Apollo 7, Houston. No, it still looks good here; you might check the waste vent and direct O<sub>2</sub> valves.

09 19 57 22 LMP Roger. We are dumping water.

09 19 57 25 CC Oh, yes. That's probably it. I'm reading about 46.8 percent now.

09 19 57 33 LMP Roger.

09 19 57 35 CDR Are you seeing rates down there, Bill?

09 19 57 37 CC I can see quantities; I'm getting readouts.

09 19 57 40 CDR No, no maneuvering rates.

09 19 57 44 CC Looks like I just lost - I lost part of my display here, but I was watching them, yes.

09 19 57 49 CDR We're building up to almost two-tenths of a degree in percent already in yaw since the dump.

09 19 57 55 CC Yes, I see it.

09 19 57 56 CDR Okay. Let's take it out now.

09 19 57 57 CC One-tenth of a degree in the other two axes.

09 19 57 59 CDR Roger.

09 19 58 05 SC ... two-tenths of a degree per second.

09 19 58 11 CC Okay. I'm making a comment.

09 19 58 39 CC Apollo 7, Houston. Coming up on LOS; Tananarive at 21.

TANANARIVE (REV 149)

09 20 23 17 CC Apollo 7, Houston through Tananarive. Standing by.

09 20 23 24 CMP Roger. Houston, Apollo 7.

09 20 23 26 CC Good morning, Donn.

09 20 23 27 CMP Hi, Jack. How are you?

09 20 23 29 CC Fine.

09 20 23 30 CMP Good.

09 20 28 09 CC Apollo 7, Houston. One minute LOS Tananarive; Carnarvon at 36.

## CARNARVON (REV 149)

09 20 38 12 CC Apollo 7, Houston through Carnarvon. Standing by.  
09 20 38 17 CMP Roger.  
09 20 39 37 CC Apollo 7, opposite omni.  
09 20 39 49 LMP Tell Ed I admire his astute judgement.  
09 20 39 56 CC Roger.

## HONEYSUCKLE (REV 149)

09 20 44 54 CC Apollo 7, opposite omni.  
09 20 44 58 CMP Roger.  
09 20 45 54 CC Apollo 7, Houston.  
09 20 45 57 CDR Go ahead.  
09 20 45 59 CC Okay. Wally, as we go over the hill here, we are looking at the primary evaporator; looks a little strange. If it dries out, you might shut it down and leave it shut down; we'll pick you up next time. We are about 45 seconds LOS here at Carnarvon. We do have Honeysuckle for another 4 minutes if you want to turn up S-band.

09 20 46 22 CDR Wilco.  
09 20 46 23 LMP We'll go ahead and shut it down, Jack.  
09 20 46 25 CC Okay. Does it look strange to you, Walt?  
09 20 46 27 LMP Yes. I'm going to shut it down.  
09 20 46 28 CC Okay. We do not have Honeysuckle, so we'll pick you up at Hawaii at 02.

## HAWAII through ANTIGUA (REV 149)

09 21 02 58 CC Apollo 7, Houston through Hawaii.

09 21 03 03 LMP Roger.

09 21 03 54 LMP Houston, Apollo 7.

09 21 03 56 CC Go ahead.

09 21 03 58 LMP Roger.

09 21 06 56 LMP Houston, Apollo 7.

09 21 06 59 CC Go ahead, 7.

09 21 07 00 LMP Jack, I've got one more helpful hint to offer on this backup alignment.

09 21 07 07 CC Okay. Go ahead.

09 21 07 08 SC Okay. In order to prevent the optics from dripping off the shaft and trunnion angle, you set - merely turn optics power off when you get it set up, and they will stay right there.

09 21 07 19 CC Okay.

09 21 07 21 CDR I think the point to make note of is that we are really tracing out what amounts to an optics shaft tieup anyway. You could consider it just that way.

09 21 07 32 CC Okay. Copy that, Walt.

09 21 08 06 LMP Hey, Jack, on the primary evaporator here, I went to MANUAL and increased for a minute, and it really didn't do much; then it started coming back up. I went to AUTO again, when I noticed the setting in here with the evaporator outlet temperature about midrange and the steam pressure in an acceptable spot. And I don't see either one of them moving at all now.

09 21 08 32 CC Okay. Copy that.

09 21 08 34 SC So I am going to start looking for a separate problem on that.

09 21 08 37 CC All right.

09 21 09 51 CC Apollo 7, Houston.

09 21 09 54 CDR Go.

09 21 09 55 CC Okay. Wally, on the primary evaporator there, the pressures and temperatures look normal to us down here on the ground. We would like to shut the evaporator down at this time; and some time after the burn, we will reservice it again and then use it prior to entry.

HAWAII (REV 150)

09 21 10 13 CDR Okay. You don't want to reservice it when I shut down?

09 21 10 16 CC Negative.

09 21 10 17 CDR And what are you showing glycol EVAP OUT temperature?

09 21 10 22 CC 44.1.

09 21 10 24 CDR Yes. Well, when this is controlling, it controls down around 40.

09 21 10 35 CC Wally, it shouldn't be boiling now. You RAD OUT slow, and it's - you are mixing.

09 21 10 42 CDR Understand.

09 21 11 02 CDR If you will notice, Jack, I don't have manual control of the steam pressure valve.

09 21 11 07 CC You have gone to INCREASE now?

09 21 11 10 LMP I went to INCREASE for about a minute and a half when I shut it out earlier, with no noticeable effect on the back pressure - the steam pressure. Subsequent to that time, it came up. When it got within a working range, I went back to AUTO. I just attempted to manipulate it again, with no noticeable effect on it. That's why I think there is something fishy with the back pressure control. It is secure now as much as I can secure it, and if we just let it sit here, it might end up drifting on up like it did before. I won't reservice it until some time before reentry then.

09 21 11 48 CC Okay. We will give you a cue.

09 21 16 46 CDR Houston, Apollo 7.

09 21 16 49 CC Go ahead. Go ahead, Wally.

09 21 16 55 CDR Roger. We are starting with ALC out; we are dark in here with floods on. Is that correct?

09 21 17 03 CC For even light, if you are going to show pictures of the panel or something like that, you should put ALC in. For spot effects, then ALC should be out.

09 21 17 17 CDR We have got floods around us here that are pretty bright. We will try out first, all right?

09 21 17 22 CC Okay. That is fine, and if it does not look like a real good picture, I'll tell you to change the position of the switch.

09 21 17 27 CDR Very good.

09 21 17 31 CC Have you got a spectacular for us this morning?

09 21 17 33 CDR Negative.

09 21 17 34 CC Okay.

09 21 17 36 CDR We are just going to be at our duty stations.

09 21 17 38 CC All right.

09 21 18 58 CC Okay. We are just starting to pick it up, Wally. The picture is not real clear yet. Okay. There, it's coming in. From the lovely Apollo room high atop everything - you might try a different position on the ALC switch. Let's see how that helps.

09 21 19 35 LMP How is that, Jack?

09 21 19 37 CC Okay. Let's go back to the other position; I think you were right. Everybody out of the pool.

09 21 19 56 SC This morning, we are at our regular crew stations passing over the United States about an hour and a half before our seventh and final burn, before our eighth burn tomorrow morning on retro fire. Donn Eisele is down in the lower equipment bay on a backup alignment technique. We had the platform aligned at this point before burn number 7. I don't know whether you can note or not, Jack, but I'm moving from the front of the attitude indicator down below up to the window, getting ready to check for dawn. It should be arriving just any moment now. I think you can

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see the ease in motion. None of us are strapped in; we feel very comfortable where we are.

09 21 20 43 CC Roger. It's coming in very clear.

09 21 20 45 CDR Roger. We thought we would try to give each of you a closer look at our beards this morning, to prove that we have been here, and we are not fans of the beard club. I will not admit to the fact that there is any grey in this beard. My hair-dresser is the only one that knows.

HAWAII through ANTIGUA (REV 150)

09 21 21 10 CC Roger. We can't see the grey; you're safe.

09 21 21 12 CDR Roger. I was wondering where the grey went. Well, I'm going down below now and let Donn get up on the couch; you can check his beard and his configuration for the day.

09 21 21 42 CC Hey, Donn, you want to move over to your - oh, that's it.

09 21 21 45 CMP Wally's going to move the camera a little bit. You have three professional cameramen up here now; so when we get back, we expect to get our union cards. I was performing a backup alignment procedure that could be used in the event of a computer failure to get the inertial platform aligned for a particular maneuver. That has been completed now. That was one of our test objectives on this flight, and it came out

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very good. We came within a quarter of a degree of the actual alignment that we wanted. Wally and I have been taking turns watching the eight balls over here keeping the spacecraft somewhere near the attitude we need for the burn, and a little later on we will bring it in precisely. Our number 1 cameraman is now coming down to dolly up on Walt Cunningham and his beard.

09 21 22 05 CC Wally, there appears to be a few pieces of lint on the lens. Thank you.

09 21 22 30 CDR Now, we would like to give you another demonstration. ... that we've noticed right about this time is the little bit of atmospheric pressure causing the spacecraft to move at this altitude, as we near the perigee, and that's what Donn's looking at on the dial right now. ..., Walt, why don't you tell them where you are now, and point the camera over your head.

09 21 23 56 LMP Okay. We are just about due for an O<sub>2</sub> purge. Because of the time, I'm going to go ahead and start the O<sub>2</sub> purge in fuel cell 1. We have three fuel cells that have been running very nicely for 11 days. I've got a camera sticking in the window here, a 16mm Maurer camera, which we have been taking strip photographs for the ground at various times, and we are presently going to stow

09 21 24 36 CMP that. We're trying to get the cockpit clean for the burn, which is due here in a couple of hours. We keep behind our couch here, a large bag which we call a temporary stowage bag. In order to preclude having to take items all the way down to where we originally got them, during the flight, we drop them in the temporary stowage bag, such as your meals, and like the camera was just done now.

09 21 24 57 CDR A rather interesting phenomena we're noting out the window, it's light now. It's very hard to tell on camera in that the details are very fine. We see about three or four different contrails from aircraft flying at high altitude, but obviously not as high as we. They show up very neatly, some people call contrails, vapor tail; they extend for hundreds of miles.

09 21 25 20 LMP I remember the one we saw, was it yesterday or the day before, over Africa, Wally.

09 21 25 25 CDR Right. Now, we've got an interesting one below us over the Gulf Coast.

09 21 25 31 LMP And as you look out the window towards the horizon, you can get a good view of the day airglow. There is a very interesting band of color that runs between the actual earth surface and up where the dark blue or black of the sky begins. It's a very pretty, very toned blue color.

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09 21 25 57 CMP I'm now going to pan back one last time across the cockpit here, and I guess this will end our weekly series with this broadcast. There is our navigator.

09 21 26 17 LMP Navigator here.

09 21 26 27 CDR The view this morning is very fascinating; we're looking all over the Gulf Coast area and looking now at Lake Ponchartrain. We can see the bridge standing out very clearly. There's a slight cyclonic disturbance in the cloud structure, which is probably the very bitter end of our friend Gladys. I hope our friends in Florida where we left some time ago, have not suffered too much with Gladys. We have one more sign for you to close out our weekly series, and we plan to drop in tomorrow and see how everybody held out.

09 21 27 04 CC Could you move it a little closer? Let's see, Donn, you want to help him out there. "As the sun sinks slowly in the west."

09 21 27 18 CDR This is Apollo 7, cutting out now.

09 21 27 23 CC A very good one, Wally.

09 21 27 24 CDR Time for a commercial.

09 21 27 46 CDR We got a good look at the last bit of Gladys just off the coast.

09 21 27 54 CC Roger.

09 21 27 58 LMP Looks like it still might be dumping a little rain on the Cape.

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09 21 28 02 CC On - Gladys is - looks like -. About north of Jacks--.

09 21 28 08 CDR Isn't it just about off the coast of Jacksonville?

09 21 28 16 CC No, Wally, Gladys is up around 40, 40 degrees north.

09 21 28 22 CDR Oh, it is? We're seeing the tail end of it, I'm sure.

09 21 28 27 CC Well, it looks like about, 67 degrees west, and 40 degrees north. That was the position at 0400 Zebra this morning.

09 21 28 51 LMP Roger. How is the weather in 164 dash one area?

09 21 28 56 CC Weather is real good there.

09 21 28 58 CDR Well, I think we are just about getting warmed up to the ... In that case, I've got a feeling today that when we come over 164-1 - our splash point that is - that we won't use the word impact.

09 21 29 27 CC Okay, Wally, I'll give you a kind of a hack when you pass close to us here, so you can take a look at it.

09 21 29 33 CDR Roger. Are we working it now, or is it the next rev?

09 21 29 37 CC No, the next rev. It will be way north of you. In just a few minutes, I'll give you a hack and it will be slightly north of you, of your present position.

09 21 29 48 CDR Okay. We'll try and give you a weather report.

09 21 29 51 CMP I'm not really worried too much about the weather, as long as the ocean is nice and smooth.

09 21 29 57 CC Understand.

09 21 29 58 CDR What we are facing up to is this is a great spacecraft, but we know it's a lousy boat.

09 21 30 16 CC Okay. Wally, you are about 65 degrees west now, and your latitude looks like about 24 degrees north, and so that would put 164 dash 1 about 240 miles north of you now.

09 21 30 30 CDR Roger. Walt will give you a report, he's looking that way.

09 21 30 34 LMP As near as I can see, there is nothing but very widely scattered cumulus to the left for one-tenth coverage that way.

09 21 30 40 CC Thank you.

09 21 30 54 CDR Do those signs come through fairly clear to you, Jack?

09 21 30 58 CC They do when you get close to the camera; it was pretty clear today.

09 21 31 04 LMP What did you think of those beards?

09 21 31 09 CC Well, they are there. We can't tell whether they are 3 inches long or a half inch long.

09 21 31 17 CDR I'd say about 101 mm.

09 21 31 22 LMP Hey, Jack, note that the steam pressure is very slowly creeping up here, and that's long after I quit operating it. We may have a sticky valve back there.

09 21 31 33 CC Okay. It looks fairly normal to us. It looks like it might have been a little bit dry.

09 21 33 06 CDR Houston, Apollo 7.

09 21 33 08 CC Go ahead, 7.

09 21 33 10 CDR Roger. One of the interesting things we've noted; I don't think we have brought it to your attention here. If you recall going to a monkey cage and watching monkeys grab bars, the monkeys always grab the same place. We found ourselves in the same condition here; using our hands and feet to maneuver about, and we always hit the same traffic spot.

09 21 33 30 CC Roger.

09 21 33 33 CDR We've become very acclimated to this.

09 21 33 38 CMP I think he's trying to tell you we've gone ape.

09 21 33 43 CC I think we guessed that.

09 21 34 05 CDR We're getting to the point where we get free rides with this perigee kick, we're just about ... attitude again. It's going to be kind of tight in this burn; it is right at perigee and out of plane.

09 21 34 16 CC Yes, that's right, Wally.

09 21 34 18 CDR I think that's probably the biggest surprise in the whole mission was the effects of this perigee torque. If you buck it, it can cost you dearly in fuel.

09 21 34 32 CC I guess it's kind of like the old aileron roll on the 86.

09 21 34 36 CDR Very good. It's about that kind of surprise, too.

09 21 34 59 CC 7, could we get your up-telemetry COMMAND RESET then NORMAL?

## ASCENSION (REV 150)

09 21 42 31 CC Apollo 7, Houston through Ascension. Standing by.

09 21 43 27 CC Roger. Copy. We're standing by.

09 21 44 49 CDR Houston, Apollo 7.

09 21 44 51 CC Go ahead, 7.

09 21 44 53 CMP Roger. What's the sunset time?

09 21 45 12 CC Donn, the next one coming up is 238 plus 12.

09 21 45 18 CMP All right. Thank you.

09 21 47 44 CC Apollo 7, you're 1 minute LOS Ascension; Tananarive in 57.

09 21 47 52 CMP Roger.

## TANANARIVE (REV 150)

09 21 59 54 CC Apollo 7, Houston through Tananarive.

09 21 59 57 LMP Roger. Jack, fuel cell 2 seems to be a little more temperamental today than it has been in the last 3 or 4 days. We're going a little faster and a little higher. The... indicates that the next hour and 6 minutes, we will state our activity.

09 22 00 19 CC Okay. Walt, you're about three-by here at Tananarive. Copy fuel cell 2 being a little more temperamental today than previously.

## CARNARVON (REV 150)

09 22 12 04 CC Houston through Carnarvon. Standing by.

09 22 12 09 CDR Roger. Loud and clear.

09 22 12 11 CC You, also.

09 22 21 52 CC Apollo 7, we are about 1 minute LOS Carnarvon; we'll pick up Guam at 25.

0 09 22 22 00 CDR Roger. Jack, on our EMS bias test for the 30-second count into the burn, and the duration of the burn it went 0.1 foot per second.

09 22 22 21 CC Roger. Copy that.

09 22 22 24 CDR ...

09 22 22 28 CC Seems that way.

GUAM (REV 150)

09 22 28 06 CC Apollo 7, Houston through Guam.

09 22 28 09 CDR Roger. Loud and clear here.

09 22 28 11 CC Loud and clear.

09 22 28 14 CMP Jack, would you reconfirm our DELTA-V as 208 feet per second? The reason I ask, the DSKY came up with a total velocity of 225, and that's quite a difference.

09 22 28 24 CC Roger. We have 208.3 on the DELTA-V counter.

09 22 28 30 CDR Roger. I got that. I just wanted to make sure I was right.

09 22 28 35 LMP Do you have to downlink, Jack?

09 22 28 37 CC Affirmative, Walt.

09 22 28 46 CC Donn, we are allowing about 17 feet a second for tail-off here on this burn.

09 22 28 52 CMP I see; we are getting more than I thought we would.

09 22 28 55 CC Roger. That was a change we made into the tail-off into the computer.

09 22 29 00 CMP Yes.

09 22 32 16 CC 7, we are 1 minute LOS Guam; we pick up Hawaii at 38.

0 09 22 32 41 LMP Downlink yet?  
09 22 32 44 CC Negative; we have lost downlink; we'll get it  
again at Hawaii.  
09 22 32 50 CMP Star check: that's 283.14, 276.99 is the shaft and  
trunnion to be right on the star.  
09 22 32 57 CC Okay.  
09 22 33 02 CC Could you say again the trunnion, Donn?  
09 22 33 05 CMP Trunnion 276.99.

## HAWAII through ANTIGUA (REV 150)

09 22 39 01 CC Apollo 7, Houston through Hawaii.  
09 22 45 28 CC Apollo 7, Houston.  
09 22 45 33 CDR Go ahead.  
09 22 45 34 CC Roger. We'd like your O<sub>2</sub> tank 1 fans OFF now to  
prevent an AUTO cycling during this burn.  
09 22 45 44 LMP It's OFF.  
09 22 55 43 CC 7, I'll give you a time hack in 10 minutes.  
09 22 55 46 LMP Okay, Jack.  
09 22 56 05 CC Five, four, three, two, one.  
09 22 56 10 CC MARK.  
09 22 56 11 LMP Looks like we are about one-half second off.  
09 22 56 13 CC I will also give you one in 2 minutes.  
09 22 56 15 LMP Okay.  
09 22 57 51 CDR You got a lot of smoke right off Galveston down  
there.  
09 22 57 54 CC Roger. Copy.  
09 22 57 56 CDR Looks pretty bad.

## HAWAII through ANTIGUA (REV 151)

09 23 01 04 CMP Number 1 is closed.

09 23 01 07 CMP Direct OFF.

09 23 01 09 CDR One roll channel.

09 23 01 10 CMP One roll channel P, and B is OFF.

09 23 01 16 CDR TVC gimbal drive, pitch and yaw, AUTO.

09 23 01 21 CMP TVC gimbal drive, pitch and yaw, AUTO.

09 23 01 24 CDR TVC servo power 1 and 2, AC 1 and AC 2.

09 23 01 38 CDR TVC servo power 1 and 2.

09 23 01 40 CMP Roger. Servo power ON.

09 23 01 42 CDR Okay. Handcontroller power 1.

09 23 01 46 CMP One.

09 23 01 47 CDR Hand controller 2 ARMED.

09 23 01 50 CMP That's Roger. It is ARMED.

09 23 02 03 CDR Okay. Bus ties ON, gimbal motors pitch 1. Start.

09 23 02 07 CMP Pitch 1 was a start.

09 23 02 12 CDR Pitch 2 or yaw 1 start.

09 23 02 14 CMP Yaw 1, start.

09 23 02 17 CDR OFF-ON.

09 23 02 18 CDR Reconfirm trim control.

09 23 02 31 CMP Roger. Got trim control. Trim is set.

09 23 02 33 CDR Very well; translation clockwise.

09 23 02 37 CMP Translation clockwise.

09 23 02 38 CDR Verifying no MTVC.

09 23 02 44 CMP No MTVC.

09 23 02 45 CDR Okay. Pitch 2 and yaw 2 ON.

09 23 02 48 CMP ON.

09 23 02 50 CDR Yaw coming ON.

09 23 02 51 CMP ON.

09 23 02 53 CDR Confirm and set GPI.

09 23 02 56 CMP Roger.

09 23 02 57 CDR Verify.

09 23 03 02 CDR Verify MEVC.

09 23 03 03 CMP Roger.

09 23 03 08 CDR ... verify.

09 23 03 09 CDR Translation neutral.

09 23 03 12 CMP Neutral.

09 23 03 13 CDR Handcontroller power, BOTH.

09 23 03 15 CMP Handcontroller power, BOTH.

09 23 03 17 CDR Roger.

09 23 03 19 CDR BMAG uncaged.

09 23 03 23 CMP BMAG - negative; not caged, I mean. I meant to say they are ATT-1/RATE 2.

09 23 03 31 CDR Roger. That's where it should be.

09 23 03 32 CMP Right.

09 23 03 38 CDR Okay. Direct RCS ON.

09 23 03 41 CMP Direct RCS ON.

09 23 03 49 CDR Verify manual attitude - RATE COMMAND.

09 23 03 52 CMP Roger. RATE COMMAND in deadband.

09 23 03 55 CDR Then you are in ATT-1/RATE 2.

09 23 03 57 CMP ... same way. Copy with it.

09 23 04 02 CC Okay. I'll give you a mark at 2 minutes. Five, four, three, two, one.

0 09 23 04 11 CC MARK.

09 23 04 12 CC T minus 2 minutes.

09 23 04 40 CC Apollo 7, verify omni Bravo.

09 23 04 59 CC Apollo 7, Houston.

09 23 05 01 CMP Go.

09 23 05 02 CC Roger. Verify omni Bravo.

09 23 05 05 CMP That's affirm.

09 23 05 06 CC Okay.

09 23 05 11 CDR We're locking up now.

09 23 05 13 CC Roger.

09 23 05 42 CDR We missed DELTA-V AUTO.

09 23 05 44 CMP EMS DELTA-V AUTO.

09 23 05 53 CDR It's 15.

09 23 06 02 CC Nine, eight, seven, six, five, four, three, two, one.

09 23 06 11 CC Zero.

09 23 06 30 CDR Go ahead. GPI's are gimbal, OFF.

09 23 06 35 CMP Gimbal motors OFF.

09 23 06 39 CDR Bus ties OFF.

09 23 06 41 CMP DELTA-V thrust, OFF-ON.

09 23 06 42 CDR Gimbal motors circuit breakers OPEN.

09 23 06 43 CMP Roger.

09 23 06 50 CMP VF downlink.

09 23 06 53 CC Affirm.

09 23 06 57 CDR TVC servo power 1 and 2 OFF.

09 23 07 03 CMP TVC servo power OFF.

09 23 07 04 CDR Direct RC is OFF.

09 23 07 06 CMP Direct RC is OFF.

09 23 07 12 CDR Handcontrollers locked.

09 23 07 17 CMP Both handcontrollers are lock d.

09 23 07 32 CMP EMS residual is minus 17.9.

09 23 07 38 CC Copy that.

09 23 07 40 CMP That's pretty good.

09 23 07 47 CMP Stand by.

09 23 08 34 CDR Hey, Jack.

09 23 08 35 CMP Houston, Apollo 7.

09 23 08 36 CC Go ahead.

09 23 08 37 CMP Did you get us an RCS quantity readout as of this minute?

09 23 08 41 CC Okay. Donn, I am going to be coming to you over Ascension with the chart readout as well as the flight plan update.

09 23 08 50 CMP Roger. Understand.

09 23 08 51 CDR Hey, Jack, I would like to go ahead and open circuit fuel cell 2 and save it for the burn tomorrow.

09 23 09 03 CC We show that  $T_{CE}$  is coming down now, Wally. We are reading 190.

09 23 09 08 CDR I show 192. It peaked out at what, about 195?

09 23 09 12 CC No, we showed 192 on the TM here.

09 23 09 17 CDR That's just before the burn. Looked like it was about 195 on my meter, and you want to go ahead and let it run with this?

0 09 23 09 23 CC Yes, we will let it run right now. We will see you over at Ascension. We've got about 1 minute LOS here.

09 23 09 28 CDR Okay.

09 23 09 29 CC We will pick you up at 17 at Ascension. We will have a flight plan update for you there.  
ASCENSION (REV 151)

09 23 17 25 CC Apollo 7, Houston through Ascension.

09 23 17 46 CC Apollo 7, Houston through Ascension.

09 23 18 12 CC Apollo 7, Houston through Ascension.

09 23 18 16 CDR Loud and clear, Jack.

09 23 18 17 CC Okay. That burn looked pretty good down here; how did it go up there?

← 09 23 18 21 CDR Right on the mark. It's a beauty.

09 23 18 25 CC It looked the same way down here. I have this flight plan update to go over with you.

09 23 18 33 CDR Okay. We will discuss it.

09 23 18 38 CC Okay. Are you ready to copy this material in the book here? They're mostly deletions.

09 23 18 43 LMP Will copy.

09 23 18 44 CC Okay. They are mostly deletions here. We still want you to do the PIPA bias EMS bias test which is scheduled at 239 50.

09 23 18 54 LMP You say cancel that?

09 23 18 55 CC No, negative. We still want you to do that one.

09 23 18 58 CDR We did it before the burn, which is much more significant. It's already done.

09 23 19 04 CMP We didn't do the PIPA bias yet.

09 23 19 05 CDR Oh, you want the PIPA bias?

09 23 19 07 CC Roger.

09 23 19 08 CDR Okay. The EMS bias is complete.

09 23 19 12 CC Okay. And at 240, you'll have that canister change which you have already been given; you want to delete the sextant calibration test. Okay. I'll be passing you up a state vector and a NAV check along with the landing block data number 26; I'll be sending you a state vector, and I'll be giving you the NAV check.

09 23 19 37 CMP Roger.

09 23 19 38 CC Okay. At 240 30, we'll initiate a charge on batt B. We want to charge batt B, the lowest battery, to verify their repeatability of the lower than expected battery charging performance that we have observed. They have run some chamber tests out at Downey to duplicate this charging, and we have concluded that it's a safe and useful thing to do, which will give us some added electrical capacity. But even without battery B, we've got sufficient electrical capacity for any kind of entry and stay time on the water.

09 23 20 20 CDR What kind of stay time?

09 23 20 22 CC 18 hours.

09 23 20 23 CDR Eighteen?

09 23 20 25 CC Well, we got more than -

09 23 20 26 CDR ... substract from about 30 hours; that's more than 48.

09 23 20 28 CC Okay. It's 18 with the hybrid reentry, Wally, but we have got way more than that.

09 23 20 34 CDR Okay.

09 23 20 35 CC And coming into - and everything else that I don't mention stays the same - you still have the photography, and at 241, we'll power -

09 23 20 47 CDR We are cancelling out H<sub>2</sub> heaters and purge?

09 23 20 49 CC Roger. Yes, that's all done; we picked that up a little later. H<sub>2</sub> heaters and the purge are cancelled, the G&N power down at 241. And -

09 23 21 00 CDR 241?

09 23 21 01 CC Yes, 241 plus 00.

09 23 21 05 CDR G&N and SCS, right?

09 23 21 06 CC Right.

09 23 21 08 CDR Okay. What I need, and you might do that now, is get the fuel reading.

09 23 21 11 CC Okay. I've got that for you.

09 23 21 12 CDR And if we have the fuel, I'd like to read the SCS up for awhile and use that fuel for photography and pulse mode.

09 23 21 20 CC Okay. Your RCS chart value is 496 pounds.

09 23 21 30 CDR Okay. It looks - let's use some of that fuel today; we can't use much of it tomorrow.

09 23 21 36 CC Okay. Wally, stand by on that value here; I'll be giving you an updated one here. Let's go ahead and finish this flight plan update.

09 23 21 45 CDR Okay.

09 23 21 46 CC At 241 10, we want to delete the P23 trunnion bias check.

09 23 21 53 CDR Roger.

09 23 21 54 CC And at 242, then you'll delete that power down?

09 23 22 00 CDR Okay. We can power down the G&N.

09 23 22 02 CC Yes, power down to G&N.

09 23 22 04 CDR Okay. We'll leave the SCS up for now.

09 23 22 06 CC Okay. For that, you'll have your power down at 241, and then we are just deleting the power down at 242. We're just powering you down an hour earlier.

09 23 22 17 CC You still have the window photography at 24 -

09 23 22 19 CDR Okay.

09 23 22 20 CC You still have the window photography at 242 30, and the chlorination - okay, over 244, we want to delete the cryogenic stratification test.

09 23 22 39 CDR CRYO out at 243. Do you want more chlorine in?

09 23 22 43 CC Roger. The chlorination still stands.

09 23 22 47 CDR Okay. We are just about right on that, so I think it would be just about right to run it every other day.

09 23 22 51 CC Okay, fine.

09 23 22 54 C: Okay. Coming on that next page of 244, you'll delete the stratification test.

09 23 23 04 CDR Roger.

09 23 23 05 CC Everything else on that page stays the same; there is an addition at 245 40. That's the H<sub>2</sub> line heaters on; and at 246, an H<sub>2</sub> fuel cell purge; and you will be deleting the canister change at 247; and you are picking that up at 250. And the remainder of the flight plan looks pretty good, Wally.

09 23 23 50 CDR Okay. I'd like to start stowing the cockpit today, and I'd like to drop that humidity survey; we filled in the block on that anyway.

09 23 23 57 CC Okay, we'll - and -

09 23 24 03 CDR We'll do the humidity survey at 245 20.

09 23 24 05 CC Okay. We'll let you know on that over Tananarive. Your chart value updated is 503, and the doctors have come up with a recommended Actifed schedule to give you the maximum crew comfort on reentry. They are recommending each crewman take one tablet at 241, another tablet at 249, and a third one at 257, and this is, the 257 one, is the most important.

09 23 24 42 CC Okay. Got that. Jack, broadcast in the blind at Tananarive if we don't answer.

09 23 24 47 CC Okay. Will do, Wally.

09 23 24 49 CDR Okay.

09 23 24 51 CC We are just about to lose you; Tananarive at 32.

09 23 25 00 CMP Jack, has the C<sub>2</sub> ... been deleted for the rest of the mission?

TANANARIVE (REV 151)

09 23 36 23 CC Apollo 7, Houston through Tananarive.

09 23 36 28 CDR Roger. All and clear, Jack.

09 23 36 30 CC Okay. You're about four-by.

09 23 36 33 CDR Well, very good.

09 23 36 44 CDR Jack, our CO<sub>2</sub> is reading quite low, less than one tenth of a mm of mercury. I would ride a little bit more there. It seems to be a very normal gage.

09 23 37 00 CC Okay. Wally, we are going to have to wait until Carnarvon to get it; we've got an 8 minute pass at Carnarvon. I got something about a tenth of a mm, but I didn't quite copy all.

09 23 37 13 CDR Say again.

09 23 37 15 CC Let's wait till Carnarvon to get your last transmission. We pick up Carnarvon at 48.

09 23 37 22 CDR Okay. There is another question.

09 23 37 41 CC No, Wally, we don't have any other information for you. We'll see you at Carnarvon.

09 23 37 47 CDR Roger. Standing by.

CARNARVON (REV 151)

09 23 49 10 CC Apollo 7, Houston through Carnarvon.

09 23 49 13 LMP Roger. Loud and clear, Jack.

09 23 49 15 CC Roger. Loud and -

09 23 49 16 CDR Jack, I think what you heard me say is that we would like to check our fuel budget and use the SPS for about two revs or more, depending on how the fuel goes, to get some photography to finish up our films.

09 23 49 32 CC Okay. Wally, I'll be coming to you with some DAP redline values and some recommendations on that.

09 23 49 39 CDR We'll have to do it right away, unless we're down that low. That will be all right; we'll use SPS to come down on the DAP redline. That sounds good.

09 23 49 49 CC Okay.

09 23 49 50 CDR We buy the SPS, obviously.

09 23 49 54 CC You're sure looking good.

09 23 49 55 LMP Jack, on that canister change at 240 even, we've got pretty good canisters in there now. We're less than 1 mm of CO<sub>2</sub>. I think I would like to let this known canister run along to about 3 mm in CO<sub>2</sub> and then go ahead and change it out and put back in the - our last brand new one, and then we won't have to count very much on the one that was in there at launch.

09 23 50 21 CC Okay. Walt, let us get back to you on that.

09 23 50 42 CC Okay. Walt, on your proposal there on the canister changes, we concur.

09 23 50 47 LMP Thank you.

0 09 23 51 03 CC Okay. Wally, you might be interested that your orbit we're tracking is now 90.0 by 231.1.

09 23 51 14 CDR Roger.

09 23 51 15 LMP Do you know what we read onboard? 230.9 by 90.0. I think.

09 23 51 19 CC Yes, I copied that. I wrote that down.

09 23 51 33 LMP Do you read 231 even as what you are painting?

09 23 51 36 CC Negative, 231.1.

09 23 51 45 LMP Sorry, you are off by .2 miles.

09 23 51 50 CC I'll tell FIDO.

09 23 51 58 CDR Tell him to watch out, with all of this high calorie food, we may be as big as he is; we don't know yet.

( 09 23 52 05 CC Roger. Copy that.

09 23 52 09 CDR So far, unless he's gone over 200, though he has improved since that last simulation.

09 23 52 16 CC Roger.

09 23 53 07 CDR Jack, you might send a call to the Pollution Control Board and have them check that smoke off Galveston. It looks terrible today.

09 23 53 16 CC Okay. Copy that, Wally.

09 23 53 41 CC Okay. Wally, I've got some recommendations for RCS fuel here.

09 23 53 50 CDR Go ahead.

09 23 53 51 CC Okay. A and D are your best quads. B and C are above the DAP redline, not uncomfortably now, but I recommend that you be very sparing when you use

(

quads Baker and Charlie. And so when you are maneuvering don't use more than 5 pounds of RCS fuel for this - your picture-taking.

09 23 54 16 CDR Roger. That's just about all we need.

09 23 54 18 CC Okay, fine; and we're recommending B and D roll.

09 23 54 24 CDR B and D roll. Roger.

09 23 54 29 LMP Jack, are you getting this PIPA bias numbers in downlink?

09 23 54 40 CC If you will just wait a minute, Wally, we'll catch you. Okay. We're getting them now.

09 23 54 57 CMP Would you like me to read you the results, or have you got my results off the DSKY?

09 23 55 03 CC Roger. We'll copy that now, Donn. Just give us a few seconds here, and we will have it all down.

09 23 55 09 CMP Okay.

09 23 55 15 CDR By the way, on the schedule for the Actifed, we looked at our schedule for the flight about 3 days ago and Dr. Walt Cunningham, mostly, finalized it, and there was one minor anomaly in the whole schedule.

09 23 55 30 CC Okay.

09 23 55 36 CDR So the doctors are doing pretty well down there.

09 23 55 38 CC Okay. Donn, would you read out PIPA bias; I guess we lost it. We lost the data.

09 23 55 44 CMP Okay. Jack, the PIPA bias I got was X plus 0.09, Y is 0, Z plus 0.08. The bias compensation as

presently loaded: it's plus 10504 plus 0 plus 0.07440. So they are all very close to axis.

09 23 56 10      CC      Okay. Copy that.

09 23 56 14      CDR      Jack, unless I don't understand this EMS, what I do to EMS bias is run it in DELTA-V and AUTO for the 30 seconds prior to the burn and the duration of the burn. That's all I am ever going to do in flight anyway. If somebody has some better ideas, I'll do it.

09 23 56 32      CC      Okay - -

09 23 56 33      CDR      After all, that's all you use it for.

09 23 56 35      CC      Okay. We copy that.

09 23 56 39      CC      Okay. We are about to lose you over Carnarvon; we'll pick you up at Guam on the hour.

09 23 56 44      CMP      Roger. I'm going to coarse align and plane enroute.

## GUAM (REV 151)

10 00 01 37 CC Apollo 7, Houston through Guam. Standing by.

10 00 01 44 CMP Roger.

10 00 01 46 CC Walt, one addition to the flight plan is a fuel cell O<sub>2</sub> purge at 249 plus 30.

10 00 01 57 LMP Roger.

10 00 02 06 CC And I've got the morning news here.

10 00 02 12 CDR Okay. We'll copy.

10 00 02 14 CC Okay. The papers and television this morning are loaded with pictures of the big wedding over in Greece. And Gladys brought much needed rain to North Carolina. It had been suffering from a drought. Maurice Chevalier, who is 80, made his final stage appearance in Paris yesterday. He's been in show business for 68 years. And over to some of the pro ball results: Green Bay and Detroit tied, Chicago whumped Philadelphia, San Francisco over New York, New Orleans beat Pittsburg, Dallas over Minnesota, Cleveland upset Baltimore, St. Louis slaughtered Washington, LA beat Atlanta, and the Oilers, you got.

10 00 03 08 CMP So Mendell got beat.

10 00 03 12 CC That's in the papers today, too.

10 00 09 30 CC Okay. Apollo 7, Houston. About 30 seconds LOS Guam; Hawaii at 15.

10 00 09 36 CDR Roger.

## HAWAII through TEXAS (REV 151)

10 00 15 37 CC Apollo 7, Houston through Hawaii.

10 00 15 40 IMP Roger.

10 00 15 43 CC Walt, on the primary evaporator, we would like to have you reservice it and leave it off.

10 00 15 51 IMP Roger. Two minutes worth?

10 00 15 53 CC Affirmative.

10 00 16 15 CC Apollo 7, Houston. We are ready to send you the NAV vector, state vector update. Would you go to ACCEPT?

10 00 16 27 CC And I have the NAV check for you when you are ready to copy it.

10 00 16 38 IMP Ready to accept, Jack.

10 00 16 39 CC Okay. Coming up.

10 00 16 47 IMP Go ahead with your NAV, Jack.

10 00 16 50 CC Okay. GET 246 plus 30 plus 0000 plus 2607 plus 15014 0947.

10 00 17 19 IMP 246 30 0000 plus 2607 plus 15014 0947.

10 00 17 30 CC Roger. That's correct.

10 00 17 34 CC And we'll be waiting a rev to give you the block data number 26.

10 00 17 41 IMP Okay. Could you give us a map update?

10 00 17 45 CC Okay -

10 00 17 49 IMP We would like to have the present orbit or the last one that you got.

10 00 17 56 CC Okay. Stand by here. NAV check is in, state vector is in, and the computer is yours.

10 00 18 09 CC Okay. The present orbit for a map update 239 plus 59 plus 37, longitude 127.9 degrees east.

10 00 18 34 IMP Roger. Thank you, Jack.

10 00 18 42 CDR We are GO on your NAV check.

10 00 18 45 CC Copy.

10 00 21 03 CC Apollo 7, Houston.

10 00 21 06 IMP Go ahead, Jack.

10 00 21 07 CC Roger, Walt. We are copying a little bit high on the steam pressure; did you do a normal service on primary evaporator?

10 00 21 21 IMP Negative, Jack, but I got more than 2 minutes of water in it.

10 00 21 26 CC About how many minutes did you put in?

10 00 21 31 IMP That was a little over 3 minutes.

10 00 21 32 CC Okay. Copy.

10 00 29 42 CC Apollo 7, opposite omni.

10 00 29 50 IMP You are on A now.

10 00 29 51 CC Okay.

10 00 30 01 IMP Any suggestions on the water boiler?

10 00 30 07 CC No, Walt; we are still looking at massaging that down here.

10 00 30 27 CC Walt, what we're doing is, we are going to do is, that we are comparing that primary evaporator now with previous couple of days data.

10 00 33 26 CC Apollo 7, Houston.  
10 00 33 28 IMP Go ahead, Jack.  
10 00 33 32 CC Have you initiated a battery charge on B yet?  
10 00 33 36 IMP Just now pulling the battery relay circuit  
breaker.  
10 00 33 38 CC Okay. Fine. We want to take a look at it before  
LOS Texas here.  
10 00 33 50 IMP It's about the same thing it started at the other  
day, I think, a little over 2 amps.  
10 00 33 54 CC Okay.

## HAWAII through TEXAS (REV 152)

10 00 35 01 CC Hey, Walt, we are about 1 minute LOS Texas; we  
pick up Ascension at 5 for a short pass.  
10 00 35 08 IMP Roger. You reading the battery charge burn?  
10 00 35 10 CC Roger. Showing 2.3.  
10 00 35 13 IMP Roger. I'll make this a normal charge, down to  
.4 amps.  
10 00 35 17 CC Affirmative.

## ASCENSION (REV 152)

10 00 55 02 CC Apollo 7, Houston through Ascension.  
10 00 55 08 IMP Hey, Jack, do you have ... spacecraft ...  
10 00 55 18 CC Walt, we have a keyhole effect here at Ascension;  
you're about two-by. I can just barely make it  
out.  
10 00 55 25 IMP Roger. We understand.

0 10 00 57 42 CC Apollo 7, 1 minute LOS Ascension; we pick you up at Tananarive at 08.

10 00 57 50 LMP ...  
TANANARIVE (REV 152)

10 01 09 14 CC Apollo 7, Houston through Tananarive. Standing by.

10 01 10 26 CC Apollo 7, Houston through Tananarive. Standing by.

10 01 16 52 CC Apollo 7, Houston. We're about 2 minutes LOS Tananarive; we pick up the Mercury at 34.

10 01 17 01 CDR Houston, Apollo 7. Out.  
MERCURY (REV 152)

10 01 34 23 CC Apollo 7, Houston through Mercury.

10 01 34 44 CC Apollo 7, Houston.

10 01 34 50 CDR Apollo 7 here.

10 01 34 52 CC Okay. Wally, just one little bit of information I wanted to get from you. I want to see how that crack in the MET has progressed after this last burn.

10 01 35 13 CDR Looks like we have the one I described on the left side above "Hundreds of hours."

10 01 35 18 CC Right. That's it.

10 01 35 20 CDR It has already reached the bottom of the glass trellis and the top below the "h" in the word "hours" to the bottom of "tens of hours." That goes all the way through. There are two smaller

0

cracks that have developed above "Hundreds of hours." The crack on the second side has not changed since we first observed it.

10 01 35 43 CC Okay. Something you might give some thought to on entry is saving some tape out before you restow everything and taping this glass up so that it probably doesn't come out when you splash down.

10 01 35 59 CDR Very good.

10 01 36 08 IMP Hey, Jack, this is Walt.

10 01 36 09 CC Go ahead.

10 01 36 11 IMP Roger. About 45 minutes ago, I turned the O<sub>2</sub> fans 1 back AUTO and ran the fans 2 for 3 minutes.

10 01 36 22 CC Okay. We copy that, Walt. And I have a -

10 01 36 27 CDR Jack, we've been trying to play a single thruster for roll, and I am not sure yet what quad you want to use for that.

10 01 36 38 CC Okay. We want to save quad B, Baker and Charlie, so use quads Alfa and Delta as much as you can.

10 01 36 48 CDR Okay. Do you have, on the back of our schematics book, the plate on the thrusters?

10 01 36 58 CC I can get it for you. You want to know circuit configuration?

10 01 37 03 CDR Right. We've got it on the back of our schematics book, and I tried that, and it doesn't work.

10 01 37 11 CC Okay.

10 01 37 12 LMP It's the taped-in chart that came from the logistics training manual, Jack.

10 01 37 16 CC Okay.

10 01 37 17 CDR Should be on the set you have there as a backup set.

10 01 37 20 CC Yes, I've got it here.

10 01 37 23 CDR I'll have Walt call out what he told me.

10 01 37 26 LMP Okay. It's probably in the front of yours.

10 01 37 29 CC Yes, I've got it.

10 01 37 33 LMP Okay. We were trying to use the quad A roll, and the channel switches were in A. So we pulled circuit breaker for A and C roll 2 main A. The channel switches were in A.

10 01 37 55 CC Okay.

10 01 37 57 LMP That should give us A1 and A2 only, right?

10 01 38 01 CC Right. You're not using it on minimum impulse, are you?

10 01 38 05 LMP Yes. You have to use minimum impulse. That's B and D, isn't it?

10 01 38 10 CC No, when you're in minimum impulse, you're going to use quads Baker and Charlie.

10 01 38 15 LMP B and C, yes. That's what we did.

10 01 38 18 CC Okay. Then when you pull AC roll to main A, you're going to knock out quads - the roll jets in quad Charlie.

10 01 38 31 IMP Yes, but right now, you want us to use A and D; but whenever we're at minimum impulse, we use B and C, so it looks like we're SOL for this one.

10 01 38 42 CC Right. You'll have to go to ACCEL COMMAND if you want to get that configuration.

10 01 38 46 IMP I think we will probably stay like this at MIN impulse.

10 01 38 49 CC Okay.

10 01 38 50 CDR Yes, that's much cheaper, Jack.

10 01 38 51 CC Right.

10 01 38 52 CDR We'll use an A and C roll.

10 01 38 54 CC Okay.

10 01 38 57 CDR ACCEL is pretty nice, but if you bump it accidentally, you hose out quite a bit.

10 01 39 01 CC Okay. We would like you to use B and D roll. You have a little more margin on quad Baker than you do on quad Charlie if you're going to be in minimum impulse.

10 01 39 14 CDR Since we finished the burn, we have used 19 pulses.

10 01 39 23 CC Okay.

10 01 39 24 IMP I'm working on 50 pulses per pound.

10 01 39 32 CC Okay. And I have your block data number 26 when you're ready to copy it, Walt.

10 01 39 37 IMP Go ahead. I'm ready to copy.

10 01 39 39 CC Okay. 153 dash 4 Alfa plus 254 minus 1610 243 plus 11 plus 05 3069, 154 dash 1 Charlie dash 4 Charlie plus 163 minus 1610 244 plus 47 plus 45 2700, 155 dash Alfa Charlie minus 236 minus 0100 245 plus 22 plus 22 6914, 156 dash Alfa Charlie minus 139 minus 0110 246 plus 55 plus 49 6280, 157 dash Alfa Charlie minus 0170 248 plus 28 plus 57 5782, 158 dash Alfa Charlie plus 053 minus 0250 250 plus 02 plus 00 5113. End.

GUAM (REV 152)

10 01 42 25 LMP Okay, Jack. Readback follows, and before that, we have just a couple more revs to go on the block data after this. If you get a chance, why don't you pass it up, and we will get it out of the way? Also, we would like that block data through REV 165. Over.

10 01 42 44 CC Okay. Copy that.

10 01 42 46 LMP Readback follows: 153 dash 4 Alfa plus 354 minus 1610 243 plus 11 plus 05 3069, 154 dash 4 Charlie plus 163 minus 1610 244 plus 47 plus 45 2700, 155 dash Alfa Charlie minus 236 minus 0100 245 plus 22 plus 6914, 156 dash Alfa Charlie minus 139 minus 0110 246 plus 55 plus 49 6280, 157 dash Alfa Charlie minus 040 minus 0170 248 plus 28 plus 57 5782, 158 dash Alfa Charlie plus 053 minus 0250 250 plus 02 plus 00 5113. Over.

10 01 43 48 CC Roger. That's got it. We are working on the remaining block data.

10 01 43 53 LMP I'd like one block, one rev past deorbit.

10 01 43 59 CC Copy. We are about 50 seconds LOS Guam; Hawaii at 52.

10 01 44 05 CDR Roger.

HAWAII through GUAYMAS (REV 152)

10 01 52 59 CC Apollo 7, Houston through Hawaii. Standing by.

10 01 53 03 CDR Thank you.

10 01 53 10 CDR Houston, Apollo 7.

10 01 53 12 CC Go ahead, 7.

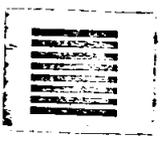
10 01 53 14 CDR Jack, I would like to give you an inventory of the film we have left, and I would like to have the people who are involved ... in the ... and the way they have them call up targets, too. I don't even know where we are going, and maybe we'll be able to get some pictures for them. We have 25 frames of 368 left and 364, and approximately 48 frames of Panatomic-X; this is black and white.

10 01 53 56 CC Okay. Wally, you faded in and out on that. I did copy that you got about 20 frames of Panatomic-X left, but I didn't copy the number of frames in S0368.

10 01 54 08 CDR 25 frames in 368.

10 01 54 11 CC 25 frames in 368, and you would like - as I understand it - for us to give you some desired





O

targets of opportu  
correct?

10 01 54 34 CDR Roger. It's only  
tion.

10 01 54 39 CC Okay. We will see  
desired targets as  
quent rev.

10 01 54 46 CDR We have got the fi  
48 frames Pan-X.

10 01 54 53 CC Copy that.

10 01 56 06 CC Apollo 7, opposite

10 01 58 01 CDR Houston, Apollo 7.

10 01 58 13 CC Say again, 7.

10 01 58 16 CDR Roger. I think th  
down to about half

10 01 58 21 CC Okay.

10 02 05 40 CC Apollo 7, Houston.  
Guaymas; we pick up

10 02 05 47 CDR Roger.  
TANANARIVE (REV 15)

10 02 44 58 CC Apollo 7, Houston t  
by.

10 02 45 20 LMP Okay, Jack.

10 02 45 22 CC Okay. Reading abou

10 02 45 27 LMP Surprised that you

10 02 45 31 CC Roger. Coming up over Guam, I'll pass you some of that information on terrain photographic targets.

10 02 45 41 LMP Roger. We are chlorinating now.

10 02 45 44 CC Okay. Copy that.

10 02 45 47 LMP It took a long time.

10 02 53 51 CC 7, we are about 1 minute LOS Tananarive; we pick up the Mercury at 08.

MERCURY (REV 153)

10 03 08 53 CC Apollo 7, Houston through the Mercury.

10 03 08 57 LMP Yes, Jack.

10 03 09 00 CC Okay. I have some of that information on photography here.

10 03 09 11 LMP Go ahead, Jack.

10 03 09 12 CC Okay. At GET of 243 55, when you approach the west coast of South America, you can shoot the 368 - S0368 water to land; at 244 01 on the east coast of South America, you can shoot the S0368 land to water. And do you feel like you want to finish it up this pass, Wally, or do you want to continue on to the next rev?

10 03 09 49 CDR We'll go on this rev.

10 03 09 51 CC Okay. I'll try to give you some times on the - well, in the next rev, you'll hit the west coast of South America about 245 32 and the east coast about 245 37. And if it's hazy, don't shoot the

368 film, and we'll give you some more targets later on.

10 03 10 19 CDR We hear you.

10 03 10 21 CC Okay. On the Pan-X, they are requesting on this rev here - on that 245 32 - a strip exposure, one exposure every 10 seconds from 245 32 until 245 37, all the way across South America to the water. And use the red filter on the Pan-X film.

10 03 10 54 LMP Is that for weather photography?

10 03 11 00 CC Okay. It's a strip photography of the land; it's not really weather.

10 03 11 07 CDR You want red only and not red and green. Is that right?

10 03 11 09 CC No, red only.

10 03 11 11 CDR Okay.

10 03 12 28 LMP Jack, you still listening?

10 03 12 32 CC Go ahead.

10 03 12 34 LMP I've got the S0368 at 243 55; I think you said something about 244 01.

10 03 12 48 CC Okay. You'll hit the west coast of South America at 243 55, and you could take some pictures there, water to land. And then at 244 01 - that's what time you'll hit the east coast of South America and could take some S0368 land to water. Did I confuse you?

10 03 13 21 CC Opposite omni, 7.

10 03 17 30

CC Apollo 7, we are 1 minute LOS Guam; we pick up  
Hawaii at 27.

HAWAII through HUNTSVILLE (REV 153)

-----

CT Hawaii AOS.

-----

CC Hawaii, Houston. Do we have AOS yet?

-----

CT Affirmative.

-----

CC Apollo 7, Houston.

-----

SC Go ahead.

-----

CC How's it going?

-----

SC Roger. Loud and clear.

-----

CC Roger. Got some late data for you here. Let me  
read it off.

-----

SC Just a second here; I'm just clearing up. We  
just took some movies of Walt getting in his  
suit.

-----

CC Stand by one.

-----

SC Roger.

-----

SC Okay. Go ahead.

-----

CC Roger. Okay. I'd like to give you some data  
here on landing without helmets. Number 1: we  
don't have any. Number 2: we are expecting  
X-axis acceleration of 7.8 which, to give you a  
reference, is twice - little over twice what we  
had in Gemini, which was 3.4. Number 3: there  
is about a 30-percent probability - there again

( )

it is a function of winds and wave actions - that you can get a tripping action or a rotation on impact of about 200 degrees a second. The concern here is that you are probably going to get some head impact with either the headrest, the struts, the girthing, or anything else that happens to be in the general area. In summary, we are concerned about getting some head damage if you impact without the helmet on. I think, on the other hand, we have some data that shows that you can impact without the helmet attached to the neckring and have reasonable protection; this has been done on a couple of sled tests. So our recommendation is that you come in with the gloves off; try to have the helmet in the vicinity of your head at least, probably on it; this you are going to have to check out and see whether you can't reach up there and clear your ears by reaching your fingers in between the neckring and the helmet. And ideally, of course, you'd attach the helmet to the neckring, say around 2K before landing, or if you can't do that, the next best thing is to have it on your head. You got all that?

----- SC

Yes. We've fitted up our couches pretty well with the way our heads pretty well constrained

- with food bags and tape, just to get our buffer. This is about all you can do with that. The helmet is - or our problem is - if we have to blow our nose; we are filled up with mucous, and we feel when they put some g on us, our sinuses are going to drain as well. We just are going to have to play that one out, I guess, Deke, and if it gets bad, throw the helmet down.

----- CC Okay. That's probably true. I think you ought to start in with the helmet in any case - -

----- SC We are pretty well convinced we will pop our ears.

----- CC Roger. Okay. I think you understand the problem. You remember Gemini 3, where we ended up with a broken visor on Gus - and we may have a few other things like this on this one - we really aren't that smart about yet.

----- SC Understand.

----- CC We'd hate to ruin that pretty profile on the landing.

----- SC (Laughter) Okay. Well, give us - we understand the problem, and I think that's all we can do with it. And we'll work on it any way we can. Sure appreciate people working on it for us.

----- CC Okay. So you are going to try to come in with them on and crack them; so that'll solve it.

Try to clear your nose then on the way down,  
right?

----- SC Roger. It's really the case of solving ... It's  
trying to blow our nose; we feel we are going to  
be coughing and possibly the stuff going in our  
throats when you put g on. I'm still blowing  
my nose right now, and I am two Actifed down the  
road.

----- CC Roger.

----- SC And all we see there together - if we can blow  
our noses inside the helmet, that's going to be  
tricky. We'll have to play with it, I guess.  
We'll try it out a little bit early.

----- CC Okay. Fine.

----- SC Roger. Thanks to you.

10 03 36 48 CC Apollo 7, Houston. One minute LOS Huntsville;  
Tananarive at 244 plus 20.

10 03 36 56 LMP Roger. Read you. Huntsville is flying. Bring  
Deke up again.

10 03 37 01 CC They were down below, Wally, and they are on their  
way back now.

10 03 37 07 LMP Okay.

10 03 37 12 CC They were - -

10 03 37 37 CC Okay. Walt, we copy a battery charging current  
of 0.4i so you can turn the battery charger off now  
at any time.

10 03 37 48 CDR Say again, Jack.

10 03 37 51 CC See you at Tananarive.

10 03 37 57 CC Wally, you can turn the battery charger off on  
batt B.

10 03 38 05 CDR Okay.

10 03 38 19 CT Huntsville LOS. Apollo 7 did not copy your last  
transmission.

TANANARIVE (REV 154)

10 04 21 24 CC Apollo 7, Houston through Tananarive.

10 04 22 09 CC Apollo 7, Houston through Tananarive.

10 04 24 22 CC Apollo 7, Houston through Tananarive.

10 04 24 27 CDR Roger. Loud and clear.

10 04 24 29 CC Roger. You are loud and clear also.

10 04 24 32 CDR ...

10 04 24 49 CC Wally, for a point of information, we are as-  
suming that stowage will be nominal for retro-  
fire. If you have any items that are stowed  
non-nominally, would you let us know for cg  
purposes? We would like to calculate cg rather  
closely.

10 04 25 14 CDR Understand ...

10 04 25 27 CC Okay. COMM is not the best here. You can give  
us a report over the Mercury on that subject.  
We will hit the Mercury at 44.

10 04 28 25 CC Apollo 7, Houston. One minute LOS Tananarive.

## MERCURY (REV 154)

10 04 45 09 CC Apollo 7, Houston through Mercury. Standing by.

10 04 45 15 CDR Roger. Stand by. We're working on our pictures.

10 04 45 18 CC Roger.

10 04 45 20 CMP Good morning, Ron.

10 04 45 21 CC Good morning, Donn.

10 04 45 24 CMP The redundant component check is complete, except for the main regs. I may get those over Hawaii; we're waiting for sunrise here.

10 04 45 31 CC Roger.

10 04 47 58 IMP Ron, I'm assuming you are recording down there. We're watching the sunrise come up. We're going to film it with ASA 1,000 film. At first, we saw some kind of a lightish gray with hardly any color, and then a very light blue, which turned into a little darker, like maybe a magenta. That blue at 1.8 degrees, we're starting to get the orange now, and it's just about light enough out there, where we can catch the clouds on the far horizon, maybe a hundred miles away being in profile. And I'm going to have to let go here in a second and start running the camera.

10 04 48 36 CC Roger. We have it recorded.

10 04 50 53 IMP After the blue layers which had various layers within itself, with the light and dark alternating, we got our layer of yellow which is

almost white, and then went on into an orange.

At first, it's a fairly dull orange, and then it's getting very bright.

10 04 51 09 CC Roger.

10 04 51 43 IMP Ron, we ran out of film just as the sun broke the horizon.

10 04 51 47 CC Yes, yes.

10 04 51 50 CDR This is really working out, Ron. I'm running a light meter and holding the spacecraft.

10 04 51 54 CC Roger.

10 04 51 59 CMP We went all the way from one-fiftieth of a second at two, moving on up while the sun was rising till we had a P22 and 1250, and I hope it turns out.

10 04 52 12 CC Roger.

10 04 52 19 CDR We have so far 160 pulses which I estimated about 3 pounds.

10 04 52 33 CC Roger. LOS.

HAWAII (REV 154)

10 05 05 12 CC Apollo 7, Houston through Hawaii.

10 05 05 16 CDR Loud and clear.

10 05 05 17 CC Roger. The same.

10 05 05 30 CDR Ron, do we have the O<sub>2</sub> manifold pressure?

10 05 05 34 CC Roger. 103.

10 05 05 38 CDR Roger. Switching.

10 05 05 49 CC 104 now.

( ) 10 05 05 55 CDR The redundant component check is GO.

10 05 05 59 CC Roger.

10 05 06 16 CDR I guess you heard we changed the word landing  
to crash.

10 05 06 20 CC Roger.

10 05 08 24 CC Apollo 7, Houston. Thirty seconds LOS, Redstone  
at 19, and we still show secondary coolant loop  
in operation.

10 05 08 41 LMP Just the pump.

10 05 08 44 CC Concur.

REDSTONE (REV 155)

10 05 20 28 CC Apollo 7, Houston through Redstone. Standing  
by.

( ) 10 05 20 31 CDR Roger, Ron.

10 05 20 33 CC Roger. Loud and clear.

10 05 22 54 CC Apollo 7, Houston. Thirty seconds LOS; Ascension  
at 33.

ASCENSION (REV 155)

10 05 43 48 CC Apollo 7, Houston through Ascension. Standing by.

10 05 46 05 CDR This is Apollo 7.

10 05 46 08 CC Houston. Go.

10 05 46 10 CDR Roger. We shut down the SCS at 38 minutes after  
the hour, and ... fuel.

10 05 46 22 CC Apollo 7, Houston. Say that again.

10 05 46 25 CDR Roger. We shut down at 245 hours 38 minutes on  
SCS.

( )

10 05 46 31 CC Roger.

10 05 46 32 CDR ... fuel.

10 05 46 39 CC Roger. Copy.

10 05 46 42 CDR That's about 4 pounds as we figure it, and not nearly as bad as the 45 we blew yesterday on a crazy experiment.

10 05 46 52 CC Roger. Copy that.

10 05 47 18 CC 7, Houston. Your surge of power was observed that time.

10 05 47 25 CDR Roger. That's what you get when you're driving an Austin Healey.

10 05 47 30 CC (Laughter).

10 05 47 36 CC 7, Houston. Opposite omni.

10 05 47 39 CDR Roger.

10 05 50 01 CC Apollo 7, Houston. Thirty seconds LOS; Mercury at 20.

10 05 50 06 CDR Roger.  
MERCURY (REV 155)

10 06 20 56 CC Apollo 7, Houston through Mercury. Standing by.

10 06 21 00 CMP Loud and clear.

10 06 21 01 CC Roger. The same.

10 06 21 07 LMP Hey, Ron, I've got two questions I'd like to have answers for, when you can get it.

10 06 21 12 CC Roger. Go.

10 06 21 13 LMP One has to do with the fuel cells. We're presently planning to power up tomorrow morning

somewhere in the 25<sup>th</sup> hour; that's so Donn can get some alignments out of the way before we get up. And fuel cell 2 has been going to worms a little faster each day. When I get up, it looks like it's climbing at a fairly healthy rate; I'd like to open-circuit fuel cell 2 and put it back on the line at about T minus 45 minutes or T minus 30 minutes. That's the first point. The other one is on the primary evaporator. I overserviced that today, and I guess we don't know exactly how much water I got in it. It was on for more than 3 minutes though. And I wanted to know are we planning on bringing the primary evaporator back on the line or not, and I suspect we probably just as well not do it, and I'd like to just go ahead and change ... secondary coolant loop with radiator bypass and put the suit circuit on the secondary coolant loop. Over.

10 06 22 30

CC

Roger. Say the last on your primary evaporator, after are we planning to use it, everything after that.

10 06 22 40

IMP

Okay. The details are down there already on - I overserviced the evaporator. I guess what I'd prefer to do instead of risking any possible problems with the steam duct, I would like to just go ahead and activate secondary coolant loop with the

radiator bypass and put the suit circuit secondary coolant loop and run a primary loop just on radiators.

10 06 23 07 CC Roger. Copy your comments; will advise.

10 06 23 12 LMP Okay.

10 06 23 15 LMP I checked all the command module RCS engine temps about an hour ago. They're already at high loads; we don't plan on heating the command module RCS engines.

10 06 23 28 CC Roger. We concur on RCS engine heaters; that is, it's not necessary to heat.

10 06 23 37 LMP Roger.

10 06 23 41 CC Apollo 7, Houston. Opposite omni.

10 06 26 19 LMP Hey, Ron, if you're still there, can you give me my present battery status? We did a charge on battery 2 today, battery B.

10 06 26 29 CC Roger. We're working on it now; we'll get it up to you, probably over Redstone.

10 06 26 34 LMP Roger. Thanks.

REDSTONE (REV 155)

10 06 52 41 CC Apollo 7, Houston through Redstone. Standing by.

10 06 52 46 LMP Roger, Ron.

10 06 52 51 CC We're checking all angles which you called down. No answers yet.

10 06 52 57 LMP Roger. Thank you. I knew you guys would do your best.

O 10 06 53 07 CC Say again, Walt.  
 10 06 53 10 LMP Roger. I knew you guys would do your best.  
 10 06 53 14 CC Roger.  
 10 06 53 42 CC Apollo 7, Houston. Opposite omni.  
 10 07 00 09 CC Apollo 7, Houston. Thirty seconds LOS; Ascension at 18.  
 10 07 00 15 LMP Roger, Ron.  
 ASCENSION (REV 156)  
 10 07 19 29 CC Apollo 7, Houston through Ascension. Standing by.  
 10 07 19 34 LMP Roger. Loud and clear.  
 10 07 19 43 CC And - 7, Houston - I have your battery status if you desire.  
 G 10 07 19 48 LMP Go ahead.  
 10 07 19 51 CC Roger. Batt A 26.26, batt B 26.31, batt Charlie 39.5.  
 10 07 20 09 LMP You mean after we did that charge this afternoon on batt B, it's still got only 26 hours?  
 10 07 20 15 CC That's affirmative.  
 10 07 20 17 LMP Okay. Thank you.  
 10 07 20 22 LMP You might say we're hard chargers.  
 10 07 20 26 CC Roger.  
 10 07 21 28 LMP Say, Ron, would you give me 35 clicks on the water pistol over the last 4 hours?  
 10 07 21 33 CC Wilco.

10 07 25 11 CC 7, Houston. The Chronicle refers to the "Majestic Apollo 7 flying machine." And they say Apollo is winding up the loose ends.

10 07 25 26 CDR Winding up what?

10 07 25 28 CC The loose ends.

10 07 25 32 LMP Winding up what, again?

10 07 25 35 CC Roger. The headlines say the Apollo is winding up the loose ends. E-N-D-S.

10 07 25 45 LMP We think it's a magnificent flying machine, too, Ron.

10 07 25 49 CC Roger.

10 07 25 50 LMP What's the loose ends for? I think we're kinda taut.

10 07 25 53 CC (Laughter) Concur.

10 07 25 59 LMP We just found out today we're not in a landing craft.

10 07 26 07 CC No comment.

10 07 26 44 CC It looks like the wires' pictures made the paper tonight, too. They were out at the Astrodome watching the Oilers' game last night.

10 07 26 53 CDR Yes, I guess they would. Jo's a complete fan of that outfit.

10 07 26 58 CC Yes.

10 07 27 09 CC About 30 seconds to LOS; Mercury at 56.

10 07 27 14 LMP Roger, Ron. We'll be just about fading out and let Donn carry on the happy evening.

10 07 27 19 CC Roger.

10 07 27 27 CDR We've had a pretty good day.

10 07 27 30 CC We concur. I'll see you down at the Cape.

10 07 27 34 CDR Roger. Ron, thanks a lot.

MERCURY (REV 156)

10 07 56 36 CC Apollo 7, Houston through Mercury. Standing by.

10 07 56 40 CDR Roger, Ron. Loud and clear. How me?

10 07 56 43 CC Roger. Loud and clear.

10 07 56 46 CDR Good show on that team. Like to speak to Flight,  
if I may.

10 07 56 56 CC Roger.

10 07 56 58 F Apollo 7, Houston Flight. How do you read?

10 07 57 10 CDR Flight, Apollo 7.

10 07 57 14 F Apollo 7, Houston Flight. How do you read?

10 07 57 16 CDR Loud and clear, Gene.

10 07 57 17 F Roger. How're you doing, Wally?

10 07 57 19 CDR Very good. I want to thank you and your team  
for an outstanding job; it was a very profes-  
sional show and one we've really enjoyed.

10 07 57 26 F Okay. Thank you very much, Wally.

10 07 57 29 CDR Walt, would you like to say a word?

10 07 57 31 LMP Say, Gene, thanks a million. It wouldn't have  
been such a great flight without the great sup-  
port we had down there. We have a magnificent  
flying machine up here, but we wouldn't have  
been going this long without you guys.

10 07 57 41 F Okay. We'll be seeing you.

10 07 57 45 CMP This is Donn. That goes for me, too, Gene.

10 07 57 47 F Okay, Donn.

10 07 57 48 CMP Very big help ...

10 07 57 49 F Roger. See you later now, Donn.

10 07 57 50 CMP Staying right in there with us.

10 07 57 52 F Roger.

10 07 57 53 CDR We'll see you cats back in the big "H" and dry  
some more beer up.

10 07 57 57 F Okay.

10 07 59 44 CC Apollo 7, Houston. Opposite omni.  
GUAM (REV 156)

10 08 04 32 CMP Houston, Apollo 7.

10 08 04 34 CC Houston. Go.

10 08 04 35 CMP Roger. Log six clicks on the water gun for Walt,  
please.

10 08 04 38 CC Wilco.

10 08 04 41 CMP And make it ten for Wally.

10 08 04 44 CC Roger.

10 08 04 45 CMP And you better make it about 20 for me over  
the last 3 hours.

10 08 04 49 CC Will do.

10 08 04 53 CMP Ron, incidentally, I haven't been keeping a very  
good check on that water consumption for the last  
couple days; so if the doctor's concerned about  
it, tell him not to worry about it. I've been

drinking plenty, I just haven't got it all logged in.

10 08 05 06 CC Roger. I understand.  
REDSTONE (REV 157)

10 08 27 46 CC Apollo 7, Houston through Redstone.

10 08 27 49 CMP Roger. Houston, Apollo 7.

10 08 27 52 CC Roger. Loud and clear. Standing by.

10 08 27 57 CMP Say, Ron, we've still got a little film up here I'd like to use, and I was wondering if you guys would give me 3 or 4 pounds of fuel so I could go ahead and use it up during the next two or three revs, 3 or 4 pounds of RCS fuel, that is.

10 08 28 15 CC Roger. Stand by. Little garbled there. I understand you want 3 or 4 pounds of RCS fuel to use.

10 08 28 22 CMP Yes, see how we stand on RCS fuel ... I'll get the fuel reading anyhow.

10 08 28 35 CC 7, Houston. Opposite omni.

10 08 28 38 CMP Roger.

10 08 28 56 CC 7, Houston. How's the voice now?

10 08 29 00 CMP Say again.

10 08 29 01 CC Roger. Loud and clear now, Donn. If you can repeat what you were saying -

10 08 29 06 CMP Oh. Roger. I was asking for an RCS fuel quantity reading for our chart, and also asked - negotiating for a few pounds of attitude fuel so I can finish off our camera film.

10 08 29 21 CC Roger. I understand. Stand by on both counts.

10 08 29 33 CMP While you're at it, maybe you can dream up some -  
or whip up some targeting for pictures.

10 08 29 48 CC Donn, we'll see you at Mercury next rev, and we'll  
have the answers available for both at that time.

10 08 29 56 CMP Roger. Say it again, Walt - Ron.

10 08 29 58 CC Roger. We'll give you the answers to both ques-  
tions at Mercury on the next rev there.

10 08 30 04 CMP Okay.

10 08 30 06 CC But it looks favorable at this time.

10 08 30 10 CMP Okay.

10 08 30 17 CMP Oh, Ron, I'll give you a film inventory. We  
have a few frames of Hasselblad color film 368  
and a couple of magazines of 16mm for the Maurer  
camera.

10 08 30 31 CC Roger.

10 08 30 32 CMP I'd like to shoot those out the window at either  
targets of opportunity or any particular targets  
that you might be able to give me, that is, you  
know, at a time when we're going over a partic-  
ular item of interest.

10 08 30 43 CC Roger.

10 08 30 44 CMP And we also have some Panatomic-X left.

10 08 30 48 CC Check.

10 08 30 50 CMP I think we've got about 25 frames of  
Pan-X and, oh, I don't know, six or eight of

368, and I'd say two rolls of camera - of movie film.

10 08 31 03 CC Roger.

10 08 31 25 CMP Oh, and while you're at it, could you get me a map update also?

10 08 31 30 CC Wilco.

10 08 32 02 CC 7, Houston. I have your map update.

10 08 32 07 CMP Roger.

10 08 32 08 CC REV 156 at 247 plus 30 plus 38, longitude 12.5 east.

10 08 32 30 CMP Roger. Would you say it again? My earpiece came out while you were talking.

10 08 32 34 CC Roger. REV 256, GET 247 plus 30 plus 38, longitude 12.5 east.

10 08 32 51 CMP Okay. Thank you.

10 08 32 53 CC Roger.

10 08 33 52 CC Apollo 7, Houston. The United States has a total of 55 Olympic medals, and 24 of these are gold.

10 08 34 01 CMP Pretty good.

10 08 34 02 CC Roger.

10 08 35 27 CC 7, Houston. Thirty seconds LOS; Ascension at 53.

10 08 35 33 CMP Roger.

ASCENSION (REV 157)

10 08 54 50 CC Apollo 7, Houston through Ascension. Standing by.

10 08 54 54 CMP Roger. Houston, Apollo 7.

10 08 54 57 CC Roger. I have your RCS quantities if you want.

10 08 55 10 CMP Okay, Ron. Go ahead.

10 08 55 12 CC Roger. At 248 hours, you have a total for your profile of 503 pounds, and I have your redlines if you desire those.

10 08 55 33 CMP Okay. Go ahead with all of them then.

10 08 55 37 CC Roger. SCS redline 533, DAP redline 458, and your hybrid 234.

10 08 55 58 CMP Okay. 503 remaining, 533 SCS, 458 DAP, 234 hybrid.

10 08 56 04 CC Affirmative.

10 08 56 25 CC And - 7, Houston - I have block data 27 whenever you want it.

10 08 56 35 CMP Okay. I can take it right now.

10 08 56 37 CC Roger. 159 dash Alfa Charlie plus 140 minus 0330 251 plus 35 plus 18 4565, 160 dash 2 Alfa plus 260 minus 0265 253 plus 13 plus 19 3625, 161 dash 1 Bravo plus 218 minus 0620 254 plus 39 plus 51 4011, 162 dash 1 Alfa plus 278 minus 0642 256 plus 16 plus 31 3446, 163 dash 1 Alfa plus 300 minus 7. Houston. Opposite omni.

10 08 58 40 CC Roger. You got it.

10 08 58 48 CC Roger. On area 163 longitude minus 0645 257 plus 55 plus 28 3007, 164 dash 1 Alfa plus 277 minus 0642 259 plus 39 plus 18 3322, 165 dash

1 Bravo plus 217 minus 0670 261 plus 16 plus  
45 3151. Over.

10 09 00 07      CMP      Okay. 159 Alfa Charlie plus 140 minus 0330  
251 35 18 4565, 160 dash 2 Alfa plus 260 minus  
0265 253 13 19 3625, 161 dash 1 Bravo plus 218  
minus 0620 254 39 51 4011, 162 dash 1 Alfa plus  
278 minus 0642 256 16 31 3446, 163 dash 1 Alfa  
plus 300 minus 0645 257 55 28 3007, 164 dash 1  
Alfa plus 277 minus 0642 259 39 18 3322, 165  
dash 1 Bravo plus 217 minus 0670 261 16 45  
3151.

10 09 01 16      CC      7, Houston. You read back correct. We'll  
have them for the next ten revs later.

10 09 01 22      CMP      Okay. Oh, I hope not!

10 09 02 11      CC      7, Houston. We're wondering about the decon-  
gestant that you're taking here about this  
time.

10 09 02 22      CMP      Oh. Roger. I forgot to log that in. Both  
Walt and Wally each had an Actifed about  
248 30, and I took one at 249.

10 09 02 30      CC      Roger.

10 09 03 28      CC      7, Houston. Thirty seconds LOS; Mercury at 32.  
And do you show an O<sub>2</sub> purge at 30?

10 09 03 41      CMP      Roger. I do.

10 09 03 42      CC      Roger. Thank you.

## MERCURY (REV 157)

10 09 32 40 CC Apollo 7, Houston through Mercury. Standing by.

10 09 32 45 CMP Roger. Apollo 7 here.

10 09 32 47 CC Roger, Donn.

10 09 32 50 CMP Fuel cell purge is complete, Ron.

10 09 32 53 CC Roger. And I've got a couple of updates for your S0368 in the Pan-X.

10 09 33 04 CMP Okay. Go ahead.

10 09 33 06 CC Roger. At 251 plus 15, we have some cloud formations over New Guinea, and they're on track. Be good for S0368 film.

10 09 33 28 CMP Okay. Will do. Can we use some fuel on them?

10 09 33 33 CC Opposite omni then. Say again.

10 09 33 38 CMP Roger. What do you say about using a little RCS fuel to turn these ends so we can get some pictures?

10 09 33 46 CC Roger. We're checking on it now. And I have a - at 252 plus 39, we have an S-V target number 34. It will be north of track; use Pan-X with red filter.

10 09 34 29 CMP Okay. At 39, you've got S-V from a turn north of track; Pan-X with red filter.

10 09 34 35 CC Roger. And you have a GO on your SCS. Recommend BD roll channel DISABLED and - -

10 09 34 46 CMP Okay.

10 09 34 47 CC Minimum impulse.

10 09 34 50 CMP Roger.

10 09 35 49 CC 7, Houston. We'd like to power up the CMC over Redstone and watch the time again.

10 09 35 57 CMP Okay. Will do.

10 09 36 00 CC Roger.

GUAM (REV 157)

10 09 36 11 CC 7, Houston. I have another Pan-X update.

10 09 36 18 CMP Okay. Go ahead.

10 09 36 20 CC Roger. And this is really the number 1 priority - at that 251 plus 00, see Ganges River in India south of track, use Pan-X with red filter.

10 09 36 46 CMP Okay.

10 09 37 09 CC 7, Houston. For your information, quad B has 4 pounds margin from the batt redline, and quad Delta has 7 pounds.

10 09 37 24 CMP I see. So just don't use TB.

10 09 37 29 CC If possible.

10 09 37 30 CMP Roger. Got you.

10 09 41 56 CC 7, Houston.

10 09 41 59 CMP Go, Ron.

10 09 42 01 CC Roger. I just got word that the - we're going to need a little more time to check that surge of power on the Saturn.

10 09 42 11 CMP Okay.

10 09 42 14 CC Okay.

10 09 42 17 CMP Yes. Roger. I copy.

10 09 43 21 CC About 30 seconds LOS; Redstone at 03.  
 10 09 43 27 CMP Roger.  
 REDSTONE (REV 157)  
 10 10 03 09 CC Apollo 7, Houston through Redstone. Standing by.  
 10 10 03 14 CMP Roger.  
 10 10 03 15 CC Roger.  
 10 10 03 23 CMP Ron, I've got a note in the flight plan that  
 says, "Battery charge as required." Has that  
 already been taken care of?  
 10 10 03 30 CC Scratch it out.  
 10 10 03 32 CMP Okay.  
 10 10 07 30 CC Apollo 7, Houston. Opposite omni.  
 10 10 07 33 CMP Roger.  
 10 10 08 09 CC Apollo 7, Houston. Everything's up to snuff on  
 the computer. You can go ahead and power down.  
 10 10 08 17 CMP Okay.  
 10 10 11 58 CC Apollo 7, Houston. One minute LOS; Ascension  
 at 32.  
 ASCENSION (REV 158)  
 10 10 33 07 CC Apollo 7, Houston through Ascension. Standing  
 by.  
 10 10 33 17 CMP Roger. This is Apollo 7.  
 10 10 33 20 CC Roger.  
 CANARY (REV 158)  
 10 10 37 33 CC Apollo 7, Houston. When you get a chance, re-  
 quest onboard readout pyro A and B and batt C.  
 So hurry.

10 10 37 45      CMP      Okay. How much time to LOS?

10 10 37 58      CC      I missed that. Say again.

10 10 38 02      CMP      How much time to LOS?

10 10 38 13      CC      Roger. About three and a half minutes.

10 10 38 48      CMP      Pyro A is 36.9, and pyro B is 36.8.

10 10 38 54      CC      Roger. Copy.

10 10 40 11      CC      Thirty seconds LOS; Redstone at 38.

REDSTONE (REV 159)

10 11 39 04      CC      Apollo 7, Houston through Redstone. Standing by.

10 11 39 11      CMP      Roger. Houston, Apollo 7.

10 11 39 13      CC      Roger. Loud and clear, Donn.

10 11 40 45      CC      Apollo 7, Houston.

10 11 40 48      CMP      Roger. Go.

10 11 40 51      CC      Roger. We understand you have a cabin soaked  
with cold, and we don't feel the cabin cold soak  
is necessary this time.

10 11 41 03      CMP      Roger. I've got a CABIN TEMP of about 65 degrees  
and SUIT TEMP of about 51. It's very comfortable  
in here right now.

10 11 41 13      CC      Roger.

10 11 41 23      CMP      Speaking of cold soak and related things, we were  
discussing putting the secondary water boiler ON  
for entry and leaving the primary OFF. Has there  
been any discussion of that down there?

10 11 41 37      CC      Lots of it.

10 11 41 39      CMP      Yes, I bet.

10 11 41 45 CC We're still discussing, Donn.

10 11 41 48 CMP Okay.

10 11 42 20 CC Apollo 7, Houston. Opposite omni.

10 11 42 24 CMP Roger.

10 11 48 17 CC Apollo 7, Houston. One minute LOS.

10 11 48 21 CMP Roger, Houston.

10 11 48 25 CC Antigua at 59.

10 11 48 29 CMP Roger. Fifty-nine for Antigua.

ANTIGUA (REV 159)

10 12 01 28 CC Apollo 7, Houston through Antigua. A one-line flight plan update.

10 12 01 45 CMP Go ahead, Ron.

10 12 01 47 CC Roger. At 258 plus 30, oxygen fuel cell purge.

10 12 02 13 CMP Roger. I understand. An O<sub>2</sub> fuel cell purge at 258 plus 30.

10 12 02 17 CC Roger.

CANARY (REV 159)

10 12 10 15 CC Apollo 7, Houston through Canary.

10 12 10 20 CMP Roger. Good morning, Bill.

10 12 10 22 CC Good morning and a pleasant last day to you.

10 12 10 27 CMP Yeah, boy.

10 12 17 32 CC Apollo 7, Houston. A little over half minute LOS Canary. S-band volume up and a 45 second for about two minutes until we get to Madrid.

10 12 17 45 CMP Apollo 7. Roger.

MADRID (REV 159)

10 12 19 33 CC Apollo 7, Houston. Coming up on LOS. S-band  
volume up at 55 for Honeysuckle; Redstone at 13.

HONEYSUCKLE (REV 159)

10 12 58 42 CC Apollo 7, Houston through Honeysuckle.

REDSTONE (REV 159)

10 13 13 54 CC Apollo 7, Houston through Redstone. Standing by.

10 13 15 24 CC Apollo 7, Houston. Are you trying to call?

10 13 15 28 CMP Negative, Bill.

10 13 15 29 CC Okay.

10 13 23 34 CC Apollo 7, Houston. One minute to LOS Redstone;  
Antigua at 32.

10 13 23 44 CMP Roger.

ANTIGUA (REV 160)

10 13 33 57 CC Apollo 7, Houston through Ascension. Standing by.

10 13 34 02 CMP Roger, Bill.

10 13 34 04 CC That is Antigua.

10 13 34 29 CMP Bill, at what station pass do you expect the  
update for the retro maneuver?

10 13 34 35 CC Stand by, Donn.

10 13 34 47 CC Hey, Donn, it will be over Antigua the next pass;  
be about one hour and a half.

10 13 34 56 CMP Okay.

10 13 41 19 CC Apollo 7, Houston. One minute LOS Antigua;  
Canary at 44.

10 13 41 28 CMP Roger.

## CANARY (REV 160)

10 13 44 31 CC Apollo 7, Houston. AOS Canary.  
10 13 50 37 CC Apollo 7, Houston. Opposite omni, please.  
10 13 50 52 CMP Roger.  
10 13 52 26 CC Roger. Apollo 7, Houston. One minute LOS Canary.  
S-band up at 53, and we'll have Carnarvon at 21.  
10 13 52 41 CMP Roger. Say again, Bill.  
10 13 52 43 CC Roger. S-band volume up in about 1 minute for  
the Madrid pass, and if no contact, we'll have  
Carnarvon at 21.  
10 13 52 52 CMP Oh, okay. Understand.

## CARNARVON (REV 160)

10 14 21 18 CC Apollo 7, Houston through Carnarvon. Standing by.  
10 14 21 27 CMP Roger. Houston, Apollo 7 here.  
10 14 21 56 CC Roger.  
10 14 24 51 CMP Houston, Apollo 7.  
10 14 24 53 CC Apollo 7, Houston. Go.  
10 14 24 56 CMP Bill, I'm just going to brief you for something  
to do up here. Wally and Walt are still asleep.  
I've got some of the spacecraft stowed - that  
that I could get at without disturbing them - and  
I'm going to be putting my suit on here pretty  
shortly. At the beginning of the next night pass,  
I'm going to try to get P51 accomplished so I can  
get a leg up on the whole time line. That way,  
when your update comes up later in the pass, if

there's time, I'd like to get P52 done, or I might wait until the next one.

10 14 25 27 CC Okay. Right. We'll - we have the REFSMMAT, NAV load, and the target load ready for the Antigua pass, and that will be at 08 past the hour.

10 14 25 42 CMP Okay. Zero eight?

10 14 25 43 CC Right.

10 14 25 45 CMP Roger.

10 14 25 48 CC So that will be ready and waiting if you - oh, that'll give you - let's see, that won't give you too much of that night pass actually.

10 14 26 00 CMP I'd like to do the P51 before that, you see.

10 14 26 03 CC Okay. If you could - if we could get through with that before 08, then we could get those three loads up to you and have that done and away with.

10 14 26 13 CMP Yes, that's a good idea, Bill. Okay. Fine.

10 14 26 16 CC Okay. Thank you.

10 14 26 18 CMP I think we can get it all done but maybe the fine alignment before they get up.

10 14 26 22 CC Okay.

10 14 27 10 CC Apollo 7, Houston. One minute LOS Carnarvon; Honeysuckle in about 1 minute; turn your volume up.

10 14 27 20 CMP Okay.

## HONEYSUCKLE (REV 160)

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10 14 30 11 CC Apollo 7, Houston through Honeysuckle. Standing by.

10 14 30 19 CMP Roger. Read you.

10 14 30 21 CC Roger.

10 14 31 31 CC Apollo 7, Houston.

10 14 31 38 CMP Roger. Go, Bill.

10 14 31 40 CC Right. Donn, I have a little discussion here on a couple of items. I would like to make a couple of recommendations. First, for entry, we would like all three fuel cells on line. And secondly, we would like to operate the coolant loops primary without the evaporator secondary loop in bypass with the evaporator on.

10 14 32 15 CMP Roger. Understand. You want the fuel cells on, all three formed for entry?

10 14 32 19 CC Affirmative.

10 14 32 20 CMP And on the coolant, you want to run the primary system with the evaporator shut down? And on the secondary, bypassing the radiators with the secondary water boiler on it?

10 14 32 32 CC That's affirmative; and, of course, if the secondary evaporator quits, well, you can switch to primary evaporator and try it.

10 14 32 48 CMP Roger. Understand.

10 14 32 50 CC Okay.

10 14 32 52      CMP      Thank you.  
 10 14 32 53      CC       Roger.  
 10 14 34 18      CC       Apollo 7, Houston. Opposite omni, please.  
 10 14 34 40      CC       Apollo 7, Houston. Opposite omni.  
 10 14 35 01      CC       Apollo 7, Houston. How do you read?  
 10 14 35 08      CMP      Fine, Bill.  
 10 14 35 09      CC       Okay. One final item. This secondary radiator -  
                   we'd like to activate that at 258 hours.  
 10 14 35 24      CMP      You're going to do what?  
 10 14 35 26      CC       I'm sorry - secondary evaporator at 258.  
 10 14 35 31      CMP      Oh, okay. Secondary evaporator at 258 hours.  
                   Understand.  
 10 14 35 34      CC       Roger.  
 10 14 35 36      CMP      I got it in my log here.  
 10 14 35 38      CC       Thank you. And we're coming up on 1 minute LOS  
                   Honeysuckle; we'll have Redstone at 50.  
 10 14 35 41      CMP      Roger.  
                   REDSTONE (REV 160)  
 10 14 50 36      CC       Apollo 7, Houston through Redstone. Standing by.  
 10 14 52 12      CC       Apollo 7, Houston. No need to acknowledge. When  
                   you get around to it, opposite omni, please.  
 10 14 57 29      CC       Apollo 7, Houston. No need to acknowledge. One  
                   minute to LOS Redstone; MILA at 06; Antigua at 08.  
 10 14 57 38      CMP      Okay, Bill.  
                   MILA (REV 161)  
 10 15 07 29      CC       Apollo 7, Houston through MILA. Standing by.

10 15 07 36 CMP Roger, Bill.

10 15 08 06 CMP Bill, you ready with the updates?

10 15 08 09 CC Say again, Donn.

10 15 08 11 CMP Are you ready with the updates?

10 15 08 16 CC Roger. We're ready if you're in ACCEPT.

10 15 08 24 CMP You've got it.

10 15 08 25 CC Thank you.

10 15 08 36 CC Donn, we're in a keyhole right now; it will be coming up in a couple of minutes.

10 15 08 40 CMP Okay. I'm standing by for the maneuver PAD whenever you have it.

10 15 08 51 CC Roger. Okay. I'll give it to you as soon as I get it.

10 15 08 53 CMP Oh, you don't have it yet. I see, no sweat.

10 15 09 10 CC Apollo 7, Houston. I have maneuver PAD when you're ready to copy.

10 15 09 14 CMP Okay. Go ahead.

10 15 09 33 CC Roger. 164 dash 1 Alfa; retrofire 259 39 1594 minus 02071 minus 00000 plus 02822 2350 minus 0260 03305 24010 minus 071 minus 134 012 30 3058 314 259 00 0000 minus 2447 plus 06813 1561 180 180 000. Comments: sextant star not visible after 259 plus 21. Another comment: backup align stars are north set. I do have boresight star information.

10 15 11 40 CMP Roger. Let's skip the boresight information for now. Readback as follows: 164 dash 1 Alfa; 259 39 1594 minus 02071 minus all balls plus 02822 2 ... 0 minus 0260 03305 24010 minus 071 minus 134 ... 012 30 ... 58 314 259 00 0000 minus 2447 plus 06813 1561 180 180 and 0.

10 15 12 35 CC Roger. Check on a couple of them on NOUN 42; apogee 2350, and in NOUN 48 Y-trim 134.

10 15 12 49 CMP Roger. That's what I got.

10 15 12 50 CC Readback is correct.

10 15 12 52 CMP You've got a very loud squeal in your transmitter there.

10 15 12 55 CC Roger. Thank you.  
ANTIGUA (REV 161)

10 15 15 36 CC Apollo 7, Houston.

10 15 15 40 CMP Roger. Go, Bill.

10 15 15 41 CC Right, Donn. We could get the SCS line heaters to A/B.

10 15 15 47 CMP Okay. You want the line heaters ON, right?

10 15 15 49 CC Right.

10 15 15 52 CMP Roger. You got all the way down to 60 degrees.

10 15 16 16 CC Apollo 7, we have the REFSMMAT, NAV, and targets in; the computer is yours. One minute LOS Antigua; we'll have Canaries at 20.

10 15 16 26 CMP Roger, Bill. Understand. I've got the computer back here. You're garbled, and you've got a very loud squeal there.

10 15 16 32 CC Okay. I'm checking on it.

10 15 16 33 CMP Your station or your transmitter is real bad.

10 15 16 37 CC Roger.

CANARY (REV 161)

10 15 22 28 CC Apollo 7, Houston. Would you go to BLOCK, please?

10 15 23 09 CC Apollo 7, Houston through Canary.

10 15 23 38 CC Apollo 7, Houston. If you read, go to BLOCK.

10 15 25 59 CC Apollo 7, Houston. Two and one half minutes  
LOS Canary; we'd like BLOCK on the uplink when  
you can get around to it, please.

10 15 27 01 CC Apollo 7, Houston. Did you call?

10 15 27 05 CMP Negative, Bill. I was just trying on my helmet  
to see if it fits.

10 15 27 08 CC Okay. Would you go to BLOCK, please?

10 15 27 12 CMP Roger.

10 15 27 13 CC Thank you.

10 15 27 28 CMP Houston, Apollo 7. How do you read?

10 15 27 30 CC I read you five-square.

10 15 27 32 CMP Okay. Fine. I just had my other COMM helmet  
on, and I just wanted to check it out.

10 15 27 36 CC Roger. About 1 minute to LOS Canaries; we'll  
have Carnarvon at 55 and confirm going to BLOCK  
now.

10 15 27 45 CMP Roger. We're in BLOCK now.

10 15 27 47 CC Thank you.

CARNARVON (REV 161)

10 15 54 47 CC Apollo 7, Houston through Carnarvon.

10 15 55 13 CMP Houston, Apollo 7. Did you call?

10 15 55 15 CC Roger. Apollo 7, Houston through Carnarvon.

10 15 55 19 CMP Roger. We're up and at 'em here. I've got my lumpy suit on, and Walt and Wally are crashing around in the LEB getting something to eat.

10 15 55 31 CC Roger. Understand. And, Donn, in behalf of the gold team here in Mission Control, we wish to extend our congratulations to the crew and wish you every good wish for a nice soft landing, and we'll see you tomorrow.

10 15 55 46 CMP Well, thank you, pardner. Thanks a lot for helping us out. Who's your flight director there?

10 15 55 51 CC Jerry Griffin.

10 15 55 52 CMP Is Jerry there?

10 15 55 54 CC Jerry, air ground 2.

10 15 55 56 F Yes, I'm here.

10 15 55 57 CMP Hey, how you doing, buddy?

10 15 55 59 F Fine.

10 15 56 00 CMP Good. Sure appreciate all the fine help you gave us up here.

10 15 56 04 F Well, thank you, and we're looking forward to seeing you when you get back to the ranch.

10 15 56 08 CMP Yes, I'll say. We'll have to - right, Walt and Wally send their regards, Jerry, to you and all

the other fellows down there. They're not suited up yet and don't have their COMM on, so I'll just pass it along.

10 15 56 22 F Okay. Thanks much, Donn.

10 15 56 24 CMP See you later.

10 15 56 25 F Roger.

10 15 56 28 CMP You going off duty, Bill?

10 15 56 29 CC Roger. I'm staying here, though. Jack will be talking with you now.

10 15 56 33 CMP I see. Okay.

10 15 56 35 CC I'll be watching you from here.

10 15 56 37 CC Good morning, Donald.

10 15 56 38 CMP Yes, I guess you would at that, wouldn't you?

10 15 56 40 CC Good morning, Donn.

10 15 56 44 CMP Hi, Jack.

10 15 59 09 CC Apollo 7, Houston.

10 15 59 17 CMP Roger, Jack.

10 15 59 19 CC Donn, just so it doesn't startle you, you're getting close to a master alarm on fuel cell 2. It's the T<sub>CE</sub>.

10 15 59 30 CMP Okay. We were just talking about that up here. Walt's of the opinion that we ought to take that mother offline when it goes over limit and save it until later. What do you guys think?

10 15 59 43 CC Okay. Stand by.

10 16 00 12 CC Apollo 7, Houston.

10 16 00 15 CMP Go.

10 16 00 16 CC Okay, Donn. On fuel cell 2, there's been a lot of discussion on that down here, and they feel that with the trends that they've seen that the  $T_{CE}$  should top out about 185, and they would just as soon leave it on the line to keep from any switching transients there. And you shouldn't reach any higher than 185 at retrofire.

10 16 00 45 CMP Okay. We're reading 181 right now.

10 16 00 48 CC Okay. That's about - you're about 4 degrees higher than the actual there. Our value down here now is 177.

10 16 00 57 CMP Okay.

10 16 02 23 CC Apollo 7, Houston. We're about 1 minute to Carnarvon. Do you want to turn S-band volume up? We'll pick up Honeysuckle for a long pass there.

10 16 02 32 CMP Okay.

HONEYSUCKLE (REV 161)

10 16 11 57 CC Apollo 7, Houston. One minute LOS Honeysuckle; we'll pick Guaymas at 36.

TEXAS (REV 161)

10 16 37 46 CC Apollo 7, Houston through Texas. Standing by.

10 16 37 50 LMP Roger. Jack, how do you read our COMM here?

10 16 37 52 CC I read you five-by, Walt.

10 16 37 55 LMP How's it going this morning?

O

10 16 37 57 CC It's going very well. How's things with you?

10 16 38 00 IMP Fine.

10 16 38 26 IMP Are you there, and are you familiar with the fuel cell performance on yesterday's burn?

10 16 38 31 CC Roger, Walt. I am.

10 16 38 34 IMP Okay. I guess if it goes on up to 200 and we're in a retro countdown, I'm not going to sweat it anyway. I'm going to let it run on. I guess - it seems to me if we went ahead and open-circuited here for the next hour and a half, we'd - maybe next 2 hours, a little longer, put it on around minus 30 or minus 45 minutes, we'd have little or no problem with it.

10 16 38 58 CC Roger. I don't think from what we have been talking about that you'll have to worry. That is, we'll get up over 200; and if it does, we have been given the GO to let it go ahead and go over 200.

10 16 39 15 IMP Roger. That's my intention.

10 16 39 17 CC Okay. We concur.

10 16 39 23 IMP It's a shame we can't get that one back and take a look at it.

10 16 39 26 CC I agree.

10 16 39 35 CC From all the data, we'll have a pretty good idea of what it is.

10 16 39 40 IMP Very good.

## MILA (REV 162)

10 16 41 32 CC Apollo 7, Houston.  
 10 16 41 53 CC Apollo 7, Houston.  
 10 16 41 55 LMP Roger. Jack, go ahead.  
 10 16 41 57 CC Okay. Walt, at 258 here, when you activate the secondary loop, we'd like you to configure the suit heat exchanger for BYPASS on the primary loop and for FLOW on the secondary loop.  
 10 16 42 13 LMP Already set up.  
 10 16 42 15 CC You're way ahead of me.

## BERMUDA (REV 162)

10 16 51 55 CC Apollo 7, Houston. We're 1 minute LOS Bermuda; we pick up the Canaries in about 3 minutes.  
 10 16 52 02 LMP Roger, Jack.  
 10 16 52 28 LMP Hey, Jack, give me 20 clicks on the water now.  
 10 16 52 32 CC Okay, Walt.

## CANARY (REV 162)

10 16 56 47 CC Apollo 7, Houston through the Canaries.  
 10 16 56 53 LMP Roger. Jack, on the command module RCS temps, we are still reading 5 volts on all of them.  
 10 16 57 05 CC Okay. Real fine, Walt.  
 10 16 57 07 LMP I'd like to bring you up to date on a canister change. We did that canister change 21 ... let me find it here. It was -  
 10 16 57 26 CC Okay. Walt, you got cut out there; copied canister change 21.

O

10 16 57 35 LMP Yes, I looked for it; we put it off until we had 3 mm or something like that on the CO<sub>2</sub> partial pressure. Anyhow, it is written down on the DTO book, which I can't quite get at now. Hang on a second.

10 16 58 34 LMP Hey, Jack, at 245 hours and 56 minutes, we did our last - put our last fresh canister in. And in the next hour or so, we are going to recycle number 1 back in.

10 16 58 48 CC Okay. Fine. Could you bring me up to date on -  
 10 16 58 52 LMP We sure had a square unfilled there.

10 16 58 56 CC Okay. You're right.

⊖

10 16 58 57 LMP Jack, we're actually two canisters short on this flight.

10 16 59 00 CC Roger, Walt.

10 16 59 01 LMP It seems impossible, doesn't it?

10 16 59 05 CC It kind of does. Could you bring me up to date on the - how you're coming on stowage?

10 16 59 11 LMP Roger. Stowage is all but complete. We took the three biobelts and stowed them in the fecal canister where we have been taking out the fresh fecal bag. And we're going to be getting unsuited on the water as soon as we get a chance on there, assuming we all come out of this in a nice smooth shape. And we have two temporary stowage bags up with the coveralls in the temporary stowage bags.

O

10 16 59 48 CC Okay.

10 16 59 49 LMP Everything else is stowed in its nominal place.

10 16 59 52 CC Okay. You got the gloves stowed and helmets on?

10 16 59 57 LMP The helmets we don't have on. We're going to try the helmets. It's our general feeling now that we probably will not be wearing those helmets. We're going to make one more stab when we get the couch down to the launch position and see what we can do about clearing our ears. I'm probably in better shape than the other guys, and I'm not too sure about my ears. By the way Wally and Donn talked, they are in a little bit worse shape than I am. And if they go with their helmets off, that's the way I'll go, too. We don't want to get the suit loop too confused, as to which way it is supposed to act.

10 17 00 30 CC Okay.

10 17 00 34 LMP There are a few items still left to be stowed and put in shape. That's like the data file, the temporary stowage items, the F - Is there an F item, Donn? F1 and F2 still have a couple of small items then that we are going to have put back in the right place when Wally gets the couch. And he is about suited, and he will be on COMM shortly.

( )

10 17 01 04 CC Okay, Walt. How about the oxygen mask? Are they put away?

10 17 01 09 IMP They are all stowed.

10 17 01 10 CC Okay.

10 17 01 12 IMP Helmets are - if we do not wear the helmets, the helmets will be tied down at the foot of the couch in front of each guy's couch. They will be below the level of the canisters down there. So it's out of the couch envelope.

10 17 01 26 CC Okay. We're not concerned about hurting the helmets. We're concerned about your heads.

10 17 01 34 IMP Roger. We understand, Deke, and we're trying to make a go of it all the way with the helmets. We haven't gotten to the position where we can try them on in the couch in the boost position yet. However, we do feel that we have - if we go with the helmets off, we'll have pretty damned good protection set up around us.

10 17 02 20 CC 7, we're about 1 minute LOS Canaries; we'll pick up Tananarive about 19.

10 17 02 28 IMP Right. Good morning, Jack.

10 17 02 34 CMP Houston, your -

10 17 02 38 CC Go ahead, Donn. You've taken the last Actifed at 257 here?

10 17 02 48 CMP Talking about Actifed, we all took it.

10 17 02 50 CC Okay. Real fine.

10 17 02 58 CMP We've still got our nausea pills left to take.

10 17 03 02 CC Okay. The carrier reports wave height 1 foot out there.

10 17 03 07 CDR That sounds almost good enough for the Air Force.

10 17 03 14 CMP We thought a little bit of chop might break the landing just a little bit.

10 17 03 20 CMP You can tell the carrier to watch out; we'll be coming down his stack.

10 17 03 29 CMP What's the carrier call?

10 17 03 32 CC Carrier call is Essex.

10 17 03 36 CMP How could you ... O<sub>2</sub>?

10 17 03 42 CC I'll be giving you a rundown on weather and call signs as we go a little bit further here.

10 17 03 49 CDR Jack, do you read CDR?

10 17 03 51 CC Roger. Five-by, Wally. We're just about to lose you.

TANANARIVE (REV 162)

10 17 19 58 CC Apollo 7, Houston. One minute LOS Tananarive; we'll be coming to you at Carnarvon at 30 with an entry update.

10 17 20 09 CDR Roger.

CARNARVON (REV 162)

10 17 30 19 CC Apollo 7, Houston through Carnarvon.

10 17 30 53 CC Apollo 7, Houston through Carnarvon.

10 17 30 58 LMP Ready to copy entry update.

10 17 31 02 CC Okay. First, Walt, we'd like you to turn your H<sub>2</sub> heaters and fans on for both tanks to the ON position for a few minutes here so we can bump up the H<sub>2</sub> pressure.

10 17 31 15 LMP Going now.

10 17 31 17 CC Okay. Then I'll give you the entry update.

10 17 31 23 LMP Ready to copy.

10 17 31 25 CC Okay one -

10 17 31 26 LMP Do you want fans and heaters ON?

10 17 31 28 CC Fans and heaters ON.

10 17 31 33 LMP For hydrogen?

10 17 31 34 CC Hydrogen, right.

10 17 31 41 LMP Fuel cell is still climbing, 184 on my gage.

10 17 31 45 CC Yes, we're considering open circuit. We want to get a few data - a little bit of data flow here before we make any decision.

10 17 31 56 CDR We'll take 10-degree flaps, too.

10 17 31 59 CC Roger. Okay. You ready on the entry update, Walt?

10 17 32 04 LMP Read it.

10 17 32 05 CC Okay. 164 dash 1 Alfa 190 000 042 000 10635 25954 J6 plus 20 plus 2763 minus 06417 16 plus 49 minus 02846 55 slash 55 19 plus 22 17 plus 02 19 plus 58 24 plus 12 043 minus 18 slash plus 40.

10 17 33 36 IMP Roger. Jack, readback follows: 164 dash 1 Able  
190 000 042 000 10635 25954 16 20 plus 2763 minus  
06417 16 49 minus 02846 55 55 19 22 17 02 19 58  
24 12 043 minus 18 slash plus 4 zero. And I have  
a question on your maneuver update remarks.

10 17 34 21 CC Okay. Stand by. Go ahead.

10 17 34 28 IMP Roger. Down at the remarks is SCS 259, and I've  
got written in here 41 on the PAD. Shouldn't  
that probably be 41 if this is for SCS burn  
backup?

10 17 34 41 CC That was for the sextant star not visible after  
259 plus 21 plus 00?

10 17 34 48 IMP Okay. Sextant star 259 plus 21. Thank you.

10 17 34 52 CC Okay.

10 17 34 55 IMP And the entry update readback was correct?

10 17 34 58 CC Perfect.

10 17 35 02 IMP Got to do something right.

10 17 35 17 CC Okay. Walt, we're recommending omni A for the  
burn and omni C for post SEP.

10 17 35 24 IMP Understand. Wilco.

10 17 35 26 CC And you'll be Simplex A for reentry, and -

10 17 35 31 IMP That's affirmed.

10 17 35 32 CC And cabin fans, that's a crew option. You can  
have no fans, one fan, or two fans. Your choice.

10 17 35 41 IMP We'll have no fans; however, I am a little bit  
interested in bringing on the secondary loops a  
little sooner. The suit is a little bit warm.

10 17 35 47 CC Okay. Stand by.

10 17 36 38 LMP Hey, Jack, on the maneuver PAD, the velocity counter setting is different from the - what showed up on the DSKY with the DELTA-V by 19.5 feet per second, I think, and you have DELTA-V tailoff at 19.

10 17 36 59 CC Okay. Stand by, Walt. We'll get a reading on that.

10 17 37 26 CC Okay. Walt, on your last question on the DELTA-V counter: that 19 feet a second is our value for the adjusted tailoff and what you should be reading in the DELTA-V counter after the burn is over.

10 17 37 41 LMP I understand that, Jack, but the DELTA-V<sub>C</sub> that you set on is generally different from the G&N reading by that tailoff amount.

10 17 37 54 CC Right. Okay. I guess I missed it, Walt. Why don't you go over it again? I guess I missed your question.

10 17 38 05 LMP Okay. In doing P30, in one of the displays, it shows DELTA-V, and we set the DELTA-V counter to be equal to DELTA-V minus the DELTA-V at tailoff. In this case, from your maneuver PAD, they were different by 19.5 feet per second, which would indicate that there was 19.5 feet per second tailoff. I commented on it at the time because

it seemed kind of large and now the DELTA-V at tailoff on the entry PAD is 19.

10 17 38 41 CC Okay, Walt.

10 17 38 44 LMP It's a small point, but I'd like to know which is which in case I have to update my entry chart.

10 17 38 49 CC Okay. We'll discuss that. We're about 1 minute LOS Carnarvon. You want to turn up S-band so we can get Honeysuckle?

10 17 38 58 LMP Okay.

10 17 39 29 CC Okay. Walt, on that question there, what has happened is the DELTA-V tailoff coming out of the CMC could be off by as much as 1 foot per second because we didn't update it yesterday. We chose not to do it because we felt it was accurate enough.

10 17 39 52 LMP Okay. Then I will update my entry chart based on how it differs from 19 feet per second. Is that correct?

10 17 39 59 CC That is correct.

10 17 40 01 LMP Understand.

HONEYSUCKLE (REV 162)

10 17 43 18 CC Apollo 7. Opposite omni.

10 17 43 27 CC Apollo 7, Houston.

10 17 43 29 CDR Go ahead, Chuck.

10 17 43 30 CC Okay. Wally, we'd like to have you turn the H<sub>2</sub> fans and heaters off now.

10 17 43 40 CDR That's done; OFF not AUTO.

10 17 43 43 CC Roger, OFF, O-F-F. And, Walt, we'd like to have you open-circuit fuel cell 2; our plans are to probably bring it back on line over the States.

10 17 43 55 CDR Understand. Welcome to the club.

10 17 44 01 CC Okay. We'd like to have you purge all fuel cells. First, make an O<sub>2</sub> purge on all fuel cells before the secondary loop activation.

10 17 44 12 LMP Okay. I'll go ahead and purge them now so that I can purge 2 before I take it off.

10 17 44 17 CC Okay. We concur.

10 17 44 19 LMP Roger.

10 17 45 11 CC And, Walt, on your question on the secondary loop activation: you can bring that loop online any time after you've done the O<sub>2</sub> purge of the fuel cells.

10 17 47 00 CC Apollo 7, we're about 1 minute LOS Honeysuckle; we pick up the Huntsville at 04.

10 17 47 09 CDR Roger.  
HUNTSVILLE (REV 162)

10 18 05 07 CC Apollo 7, Houston through the Huntsville. Standing by.

10 18 05 12 CDR Roger. Loud and clear.

10 18 05 15 CC You're about three-by, Wally.

10 18 05 18 CDR Roger.

10 18 05 32 CA Huntsville. I'm reading you five-by. I'm ready for lockup now.

10 18 08 50 CT Huntsville LOS.

10 18 09 24 CT Huntsville AOS.

10 18 09 50 CT Huntsville LOS.

GUAYMAS through BERMUDA (REV 162)

10 18 11 45 CC Apollo 7, opposite omni.

10 18 13 36 CC Apollo 7, Houston.

10 18 13 41 CDR Go ahead.

10 18 13 43 CC Okay. Wait, we're ready to bring fuel cell 2 back on the line.

10 18 13 50 LMP It's been setting down; both buses have been down around 26.3 volts, Jack. It seems to me it would be a little safer if we waited another half hour or so to bring it on. What do you think?

10 18 14 11 CC We're mulling it over here.

10 18 14 20 LMP Fuel cells 2 and 3 are both heating up. They should be picking up. Well, we ought to go ahead and turn it on, I guess. We keep triggering the main bus undervoltage down there.

10 18 14 32 CC Okay. We concur.

10 18 14 35 LMP Okay. Incidentally, it started happening when I turned the secondary coolant loop pump on; it was just enough to pull it down.

10 18 14 42 CC Roger. We were watching it.

10 18 14 55 LMP It's back on the line.

10 18 14 56 CC Okay. We're watching it.  
GUAYMAS through BERMUDA (REV 163)

10 18 17 15 CC Apollo 7, Houston.

10 18 17 18 CDR Go ahead.

10 18 17 20 CC Wally, generally how is your configuration,  
stowage configuration for reentry now?

10 18 17 26 CDR Okay. We're all stowed. We have the helmets  
stowed below our feet, and we're rigged up;  
we're not strapped in.

10 18 17 34 CC Okay. Are the O<sub>2</sub> masks stowed someplace where  
they might be accessible in case of RCS injec-  
tion on the chutes?

10 18 17 44 CDR They are at the nominal point.

10 18 17 47 CC Okay.

10 18 17 50 CDR And tell everybody to stop wringing their hands.  
We're happy. We've practiced this quite a few  
times.

10 18 18 04 CC Okay.

10 18 18 11 CC Practiced what?

10 18 19 16 CC Apollo 7, Houston.

10 18 19 18 CDR Go ahead.

10 18 19 19 CC Okay. Walt and Wally and Donn, I'll give you  
164 dash weather. I'll update it. The weather  
is generally good; 1500 foot broken, 10 miles  
on the vis, winds are two ten at 15 knots, wave

height is 4 feet. You've got a carrier on station, three helicopters, and two rescue aircraft.

10 18 19 44 CDR And what's the carrier's call?

10 18 19 46 CC Essex.

10 18 19 49 CDR They have a call, Jack, in lieu of a name.

10 18 19 58 CC Stand by, Wally.

10 18 20 00 CDR Roger. Like we are Apollo 7, they are - they can put names on them.

10 18 20 07 CC Okay. Stand by.

10 18 20 25 CC Okay. Wally, the call sign for the carrier is just the Essex. Your rescue aircraft are Kenby Rescue 1 and Kenby Rescue 2, and the helicopters are Recovery 1, 2, and 3.

10 18 20 42 CDR Very good.

10 18 20 43 CC And I'll give you an update on the weather farther along.

10 18 20 50 CDR It's a special case if the carrier is using her name.

10 18 20 56 CC Roger.

10 18 21 58 CDR Jack, you read?

10 18 22 00 CC Go ahead, Wally.

10 18 22 02 CDR I might add we all feel very good and chipper up here. We all got a lot of good sleep; we're well hydrated and had a lot of food, so there's not much more to do and let the computer work for us.

10 18 22 12 CC Okay. I think we're all the same down here.

10 18 22 15 CDR Very good.

10 18 23 11 CDR Houston, Apollo 7.

10 18 23 14 CC Go ahead, Wally.

10 18 23 15 CDR Are we over the recovery force now?

10 18 23 18 CC Just about, Wally.

10 18 23 20 CDR We heard a call sign, Lucky Strike.

10 18 23 26 CC Okay. Wally, we got you for another 4 and  
1/2 minutes here.

10 18 23 30 CDR Very good. We aren't having any luck with the  
sextant star yet; it's been behind the earth.  
We'll try a daylight pass; and up to about retro  
minus 40 minutes, we'll give it a go. After  
that, we'll have to forget it.

10 18 23 44 CC Okay.

10 18 23 47 CC Apollo 7, Houston.

10 18 23 48 CDR Go ahead, Deke.

10 18 23 50 CC Roger. Did you conclude you could not get hel-  
mets on? Is that the problem?

10 18 23 54 CDR No, we can get them on; we can't get them off.

10 18 23 57 CC Okay. But the mode we wanted was to have them  
on without being latched down to the neckring.

10 18 24 04 CDR Deke, I can't get my hand in there, besides a  
handkerchief, and we're not at all safely braced  
for landing. We'll evaluate as carefully as we  
can.

10 18 24 17 CC Okay. I think you ought to clearly understand that there is absolutely no experience at all with landing without the helmet on.

10 18 24 24 CDR And there is no experience with the helmet either on that one.

10 18 24 27 CC That one we've got a lot of experience with, yes.

10 18 24 30 CDR If we had an open visor, I might go along with that.

10 18 24 35 CC Okay. I guess you better be prepared to discuss in some detail when we land why we haven't got them on. I think you're too late now to do much about it.

10 18 24 43 CDR That's affirmative. I don't think anybody down there has worn the helmets as much as we have.

10 18 24 50 CC Yes.

10 18 24 51 CDR We tried them on this morning.

10 18 24 53 CC Understand that. The only thing we're concerned about is the landing. We couldn't care less about the reentry. But it's your neck, and I hope you don't break it.

10 18 25 06 CDR Thank you, babe.

10 18 25 10 CC Over and out.

10 18 25 13 CDR Say again.

10 18 25 33 CC Houston out.

10 18 27 18 CC 7, we're about 1 minute LOS Bermuda; we pick up the Canaries at 33.

10 18 27 23 LMP Roger, Jack.  
 CANARY (REV 163)

10 18 32 41 CC Apollo 7, Houston through the Canaries. Stand-  
 ing by.

10 18 32 45 LMP Roger, Jack.

10 18 33 15 CC Apollo 7, Houston.

10 18 33 20 CDR Go ahead, Houston.

10 18 33 21 CC Okay. Walt, you can turn the SPS line heaters  
 off now. We're showing a VALVE TEMP of 60 which  
 is okay.

10 18 33 30 LMP Roger. Turn them off.

10 18 34 07 CDR Houston, this is Apollo 7. I'll be prepared to  
 talk about the whole mission when we get back.

10 18 34 14 CC Roger, Wally.

10 18 37 01 CC 7, we're about 1 minute LOS Canaries; we'll pick  
 up Tananarive at 51.

10 18 37 07 CDR Roger. We changed canister number 1 and put it  
 back in.

10 18 37 12 CC Okay. Copy that.  
 TANANARIVE (REV 163)

10 18 51 28 CC Apollo 7, Houston through Tananarive. Standing  
 by.

10 18 51 33 CDR Roger.

10 18 52 22 LMP Houston, Apollo 7. Do you read through Tanana-  
 rive? Over.

10 18 52 25 CC Roger. Walt, we're reading about four-by.

10 18 52 29 LMP Okay. We'll come up over Carnarvon. We have SECS LOGIC down; we're standing by for a pyro ARM; and I assume that you'll insure that we leave Carnarvon with a clean tape for reentry, and if you don't, would you let me know so I can COMMAND RESET and get it going before we deorbit?

10 18 52 44 CC Okay. Will do.

10 18 53 19 CC Apollo 7, Houston.

10 18 53 22 LMP Go ahead, Jack.

10 18 53 23 CC Okay. Walt, we didn't see you initiate the DAP for the VERB 46 there.

10 18 53 31 LMP I did initiate the DAP.

10 18 53 34 CC Okay. That's all we wanted.

10 18 53 36 LMP Chute or what? Send another one. I went to DAP right after P30 instead of VERB 46. I'm checking.

10 18 53 51 CC Okay. We just didn't see it and wanted to confirm.

10 18 53 54 LMP That's good, but it has been set.

10 18 53 57 CC Roger.

10 18 58 11 CC Apollo 7, we're 1 minute LOS Tananarive; Carnarvon at 06.

CARNARVON (REV 163)

10 19 06 26 CC Apollo 7, Houston through Carnarvon. Standing by.

10 19 06 30 CDR Roger. Are we GO for pyro?

10 19 06 33 CC Stand by. We want to look at it here.

10 19 06 36 CDR Roger.

10 19 07 19 CC Apollo 7, you are GO for a pyro ARM.

10 19 07 24 CDR Thank you, Jack.

10 19 07 32 LMP Pyro ARM.

10 19 07 33 CDR Pyro A ON, pyro B ON.

10 19 08 13 LMP One ON and two ON.

10 19 08 33 CDR That's kind of a lot of fun to hear that.

10 19 08 39 LMP Roger. We've pressurized our command module RCS.  
We seem to have had a chattering regulator for  
awhile.

10 19 08 46 CC Roger.

10 19 08 47 CDR She's in compression.

10 19 08 53 CDR Houston, Apollo 7.

10 19 08 54 CC Go ahead, 7.

10 19 08 56 CDR Did you ever hear a Model A on a cold day?  
That's what it sounded like.

10 19 09 00 CC Roger.

10 19 09 06 CDR We could hear it go through the lines. We're  
happy with the CM RCS.

10 19 09 10 CC Roger.

10 19 09 20 LMP Houston, Apollo 7. Do you monitor our helium  
pressures on rings 1 and 2?

10 19 09 25 CC Affirmative.

10 19 09 27 LMP Roger. We're reading 35; checklist calls for  
4000.

10 19 09 39 CDR It looks like it may be warming up.

10 19 09 47 IMP Do you concur with the 4000 figure in the check-  
list, Houston?

10 19 09 52 CC Affirmative. We're watching it here; we'll let  
you know.

10 19 09 55 IMP Roger. Okay.

10 19 09 57 CDR We don't have a pump on the end, so we'll use  
what we've got.

10 19 10 31 CC Apollo 7, Houston.

10 19 10 35 IMP Go ahead, Jack.

10 19 10 40 CC Stand by one.

10 19 11 02 CC Apollo 7, Houston.

10 19 11 04 CDR Go ahead.

10 19 11 05 CC Donn, our telemetry here shows that the RCS DAP  
has not been initiated.

10 19 11 13 CMP Okay. We'll do it again.

10 19 11 14 CC Okay.

10 19 11 22 CDR Okay. We'll check your telemetry out.

10 19 11 25 CC Roger.

10 19 11 29 CDR What does that look like?

10 19 11 31 CC Stand by.

10 19 11 52 CC Okay, 7. We show it now running.

10 19 11 56 CDR Very good. The call was worth it.

10 19 11 58 CC Roger.

10 19 12 02 CDR We did initiate that before. I was quite sur-  
prised.

10 19 12 06 CC Roger.

10 19 13 01 CC Apollo 7, the DSE is yours; it's clean.

10 19 13 07 LMP Roger. Thank you. Would you people initiate  
expulsion prior to deorbit burn?

10 19 13 16 CC Okay. Walt, you'll need to hit high bit rate  
and up telemetry to COMMAND RESET at that time.

10 19 13 26 LMP Okay. We'll do it then, and we'll do it 30 sec-  
onds prior to the burn.

10 19 13 30 CC Roger. That's fine.

10 19 14 30 CC Apollo 7, we're about 2 minutes LOS Carnarvon.  
You want to turn up S-band for Honeysuckle?

10 19 14 38 CDR Wilco.  
HONEYSUCKLE (REV 163)

10 19 20 10 CC Apollo 7, we're about 2 minutes Tananarive; we  
pick up Hawaii at 33. I mean Honeysuckle.  
HAWAII through BERMUDA (REV 163)

10 19 34 05 CC Apollo 7, Houston through Hawaii.

10 19 34 08 CDR ...

10 19 35 45 CDR Okay. Direct RCS ON.

10 19 35 46 LMP Check with Ron, Wally.

10 19 36 00 CC Apollo 7, Houston through Hawaii.

10 19 36 02 CDR Roger. Just completed gimbal drive check.

10 19 36 11 CDR ... three. Verify RATE COMMAND.

10 19 36 14 LMP Let's verify where the trim ended up.

10 19 36 17 CDR It looks good.

10 19 36 18 LMP Okay. BMAG mode 3.

10 19 36 21 CDR Okay. Three of them, right? One rate two, one, two, and three.

10 19 36 26 LMP Okay. We're standing by for 2 minutes.

10 19 36 30 CC I'll give you a time hack at 2 minutes.

10 19 36 32 CDR Roger.

10 19 36 36 CC Okay. A final --

10 19 36 37 LMP Thanks for the long hours of support, Jack.

10 19 36 39 CC Okay. It's been real fine, Walt. Just a final update on the weather in the recovery area: 2000 broken, winds 270 at 20, wave height at 3 feet.

10 19 36 51 CDR Roger.

10 19 37 07 CC Nine, eight, seven, six, five, four, three, two, one.

10 19 37 16 CC MARK.

10 19 37 17 CC T minus 2 minutes.

10 19 37 18 LMP We're with you, Daddy.

10 19 37 19 LMP FDAI scale five-five.

10 19 37 21 CDR Five five.

10 19 37 22 LMP DELTA-V thrust A and B NORMAL.

10 19 37 29 LMP Handcontrollers ARMED.

10 19 37 32 CDR ARMED.

10 19 37 34 LMP Number 1 ARMED.

10 19 37 39 LMP Okay. Standing by for up telemetry COMMAND RESET. I'll get that at 45 seconds.

10 19 38 16 CC Sixty seconds.

10 19 38 27 CDR Up telemetry is going to COMMAND RESET.  
10 19 38 45 LMP Thirty seconds. EMS DELTA-V in AUTO.  
10 19 38 49 CDR DELTA-V in AUTO.  
10 19 38 50 LMP Flight qual recorder ON.  
10 19 38 51 CDR Recorder's ON.  
10 19 38 53 CMP PIPA'S are counting.  
10 19 38 54 LMP Four-jet ullage, 15 seconds.  
10 19 38 56 CDR Roger.  
10 19 39 01 CC Fifteen seconds.  
10 19 39 02 CDR Roger. And DELTA-V's counting.  
10 19 39 06 CDR&CC Ten, nine, eight, seven, six, five, four, three,  
two, one.  
10 19 39 16 CDR&CC RETROFIRE.  
10 19 39 18 CDR And we're right on the mark.  
10 19 39 29 CDR Cutoff very good.  
10 19 39 34 CDR Gimbal's coming OFF.  
10 19 39 37 LMP There's your residual.  
10 19 39 40 CDR Turn four channel ON.  
10 19 39 48 CC Copy residual.  
10 19 39 54 CC And, Walt, one last reminder: turn S-band  
volume up before seven.  
10 19 39 59 LMP Roger.  
10 19 40 07 CDR 19.8 on the DELTA-V counter for the residual.  
10 19 40 10 CC Copy that.  
10 19 40 12 LMP We burned residuals to one-tenth.  
10 19 40 15 CC Roger.

10 19 40 16 LMP DELTA-V thrust A and B OFF.

10 19 40 19 CMP Spacecraft control to SCS.

10 19 40 21 CDR SCS.

10 19 40 22 LMP Gimbal motors are OFF. Circuit breakers. Gimbal motor control, four OPEN.

10 19 40 28 CDR Four OPEN.

10 19 40 28 LMP TVC servo power, one and two OFF.

10 19 40 31 CDR One and two OFF.

10 19 40 34 LMP Rotation handcontroller number 1 Locked, Donn.

10 19 40 38 CMP Controller locked.

10 19 40 40 LMP EMS mode. Stand by; I've logged the residuals.

10 19 40 43 CDR Okay. 99.

10 19 40 47 CC Okay. That's good. It was.

10 19 40 51 CDR Let's move out.

10 19 40 59 CC Call program 61.

10 19 41 08 CDR You've got the rate 49-20.

10 19 41 18 LMP Primary glycol to radiator pulled, Wally.

10 19 41 22 CDR Mighty big handle. PLSS is pulled, babe.

10 19 41 26 LMP Okay. PLSS valve ON.

10 19 41 28 CMP PLSS ON.

10 19 41 36 LMP Oxygen service module supply valve OFF, and you could be yawing 45 feet out of plane, Wally.

10 19 42 13 CDR Okay. Service mode supply valve OFF.

10 19 43 11 CC Roger. LOS. Lost signal downlink.

10 19 45 34 CMP B and D; the roll, pitch, and yaw to channel A.

10 19 45 53 CC Apollo 7, Houston. We're back with you.

10 19 45 56 CDR Reading you five-square, Jack. Everything came out hunky-dory.

10 19 45 59 CC Okay. We lost you there for about 2 minutes.

10 19 46 03 LMP Standing by for a postburn update.

10 19 46 05 CC Okay.

10 19 46 10 LMP We had two main bus A and two main bus B under-voltage at SEP, and we got all three batteries ON. There is nothing more we can do; we are reading 25.2 volts.

10 19 46 19 CC Copy that.

10 19 47 04 CDR 259 54.

10 19 47 52 CC 7, we'll have the postburn PAD for you in about 2 minutes.

10 19 47 58 CDR Everything's working beautifully, Jack.

10 19 48 00 CC Right. You're looking good. You're coming right down the line.

10 19 48 03 CDR It's a slap in the face when we separate.

10 19 48 05 CC Roger.

HAWAII through BERMUDA (REV 164)

10 19 52 00 CC Apollo 7, Houston.

10 19 52 02 CDR Ready to copy.

10 19 52 04 CC Roger. Go with the preburn PAD. You were that close.

10 19 52 07 CDR Thank you.

10 19 52 08 LMP How about that?

10 19 52 11 CC You're looking real good, Wally. Coming right  
down the line.

10 19 52 13 CDR Roger, Ron.

10 19 52 21 CDR We're on ring A, and she's a really nice control  
system.

10 19 52 25 CC Roger. Copy that.

10 19 54 41 CC You're still looking good, 7.

10 19 54 43 CDR Roger. We're flying a pink cloud.

10 19 54 53 CDR Good.

10 19 59 17 CC Apollo 7, Houston.

10 19 59 39 CC Apollo 7, Houston. Standing by.

10 20 00 25 CC Apollo 7, Houston. Standing by.

10 20 01 26 CC Apollo 7, Houston.

10 20 04 37 CC Apollo 7, Houston.

10 20 05 02 CC Apollo 7, Houston.

10 20 05 13 CC Apollo 7, Houston.

10 20 05 29 CC Apollo 7, Houston.

10 20 05 50 CC Apollo 7, Houston.

10 20 06 23 CC Apollo 7, Houston.

10 20 06 45 CC Apollo 7, Houston.

ARIA 4 (REV 164)

10 20 06 51 CC ARIA 4. Go REMOTE.

10 20 06 59 CT ARIA 4. Going REMOTE.

10 20 07 09 CC Apollo 7, Houston.

10 20 07 22 CC Apollo 7, Houston through ARIA.

10 20 07 39 CC Apollo 7, Houston.

( )

10 20 08 01 CC Apollo 7, Houston.

10 20 08 21 CC Apollo 7, Houston.

10 20 10 09 CC Apollo 7, Houston.

10 20 16 05 CT ... up to about 40 dB when we have it, but we have been unable to AUTO track it.

10 20 19 07 CT Okay. COM TECH, ARIA 4.

10 20 20 34 CC We still have - -

10 20 22 06 CC Roger. Out.

RECOVERY 3 (REV 164)

10 20 30 01 R-3 This is Recovery 3. We are on top of the command module at this time on these online coordinates 11537.

10 20 30 12 CDR Recovery 3, this is Apollo 7.

10 20 30 13 R-3 Roger, Apollo 7. ... coordinates ... 33. We have a little communications with Apollo 7 at this time. Conditions appear normal. The command module is moving into a stable I position. We have maneuvered to commence frogman deployment.

10 20 30 39 CDR Recovery 3, as soon as you attach the flotation ring, we will deploy the grappling hook.

10 20 30 53 CDR Apollo 7 here, Recovery 3.

10 20 31 00 R-3 Apollo 7, this is Recovery 3. Go ahead.

10 20 31 03 CDR Roger. Please inform us if deployment is required of the grappling hook.

10 20 31 21 R-3 Apollo 7, this is Recovery 3. We are in the process of making our ...; we will have backoff without voice communications. Over.

10 20 32 33 CDR We understand that; and if you want the grappling hook, give us a little lead time; we'll be standing by. Over.

10 20 32 24 R-3 Essex, this is Recovery 3. All prelifting ... have been complied with, flotation collar affixed, and I am presently approaching the command module.

10 20 32 33 E Roger.

10 20 32 35 R-3 Essex, this is Recovery 3 by ... 1186.5.

10 20 32 41 E Roger.

10 20 32 49 R-3 Apollo 7, this is Recovery 3. Over.

10 20 32 52 CDR Go ahead, Recovery 3.

10 20 32 57 CDR Apollo 7, go ahead.

10 20 32 59 CDR Go ahead, Recovery 3. ...

10 20 33 10 R-3 This is Recovery 3. As soon as our frogmen complete installing the flotation gear, everything is functioning normal. The command module appears ... bluish on one side and a yellowish color.

AIR BOSS

10 20 33 30 AB This is Air Boss on station on recovery of the command module ...

10 20 33 41 AB This is Air Boss. The command module is in stable I position, floating very nicely. The

three uprighting bags are fully inflated. One swimmer is installing the flotation collar. One swimmer is now attaching the sea anchor; the other two swimmers are now attaching the flotation collar; the beacon has already been attached. The collar is now approximately one-third attached. There has been very slight scorching on approximately one-third of the area of the command module. The rest is ...

AIR BOSS

- 10 20 34 20 AB Apollo 7, Air Boss. Over.
- 10 20 34 22 CDR Go ahead, Boss.
- 10 20 34 23 AB Roger.
- 10 20 34 26 CDR Very good. Our Air Force type had a little bit of nausea, but is none the worse off.
- 10 20 34 33 AB Roger.
- 10 20 34 36 AB Essex, Essex, this is Air Boss. Over.
- 10 20 34 37 E Roger. This is Essex.
- 10 20 34 38 AB Roger. The astronauts report they are all very, very good. Over.
- 10 20 34 45 E Roger.
- 10 20 34 46 AB Command module has no apparent damage to it at this point. The collar is now about to be attached; the two ends are now being joined by the swimmers in the water.
- 10 20 35 06 E Roger.

10 20 35 10 AB There is no apparent sea dye in the water at this time that we can see. The inflation's about to begin.

10 20 35 25 AB The rotating beacon does not appear to be working at this time; however, the antennas - the two VHF antennas are erected. The swimmers are making the final check on the collar prior to inflation. The third swimmer is below the command module proceeding to take pictures. The rotating beacon is now operating. The two VHF antennas are extended. The three flotation bags are inflated, and photo 1 is now entering the area.

10 20 36 01 Photo 1 Air Boss, request clearance for photo 1.

10 20 36 05 AB Photo 1 -

10 20 36 14 AB Air Boss to Apollo 7 commander. Do you see the lights, now? I didn't have the switch on.

10 20 36 18 CDR Stand by. 7.

10 20 36 21 AB Roger. Checklist for verification.

10 20 36 23 CDR Roger. Stand by. This is Air Boss. We have the beacon, and it is now operating properly.

10 20 36 27 CDR Well, good! Just takes a little bit of switchmanship, I guess.

10 20 36 30 AB Stand by.

10 20 36 33 AB The procedures now - our cell has not been inflated ... appears to be no trouble at this

time. The swimmers are just making final check.  
It's inflating and secure.

10 20 36 48 AB The collar is now starting its inflation. It is one-third inflated at this time. All appears to be normal.

10 20 37 04 AB This is Air Boss standing by about 5 miles away. Five miles. The command module bears 130 magnetic, 5 miles from your position at this time.

10 20 37 17 E Essex. Roger. The flotation collar is now fully inflated. The swimmers are checking around the command module to assure that all the attachments are complete.

10 20 37 42 CDR Air Boss, Apollo 7. We're in good shape. We're going to go off COMM for about 4 or 5 minutes.

10 20 37 48 AB Roger. We'll just be orbiting up here in place.

10 20 37 51 SC Okay.

10 20 37 57 AB Essex, this is Air Boss. Apollo 7 is going off COMM now for about 5 minutes. ...

10 20 37 59 E Essex. Roger.

10 20 38 24 R-3 Essex, this is Recovery 3. We did not recover the three main chutes nor do we have them in sight at this time. Over.

10 20 38 33 E Essex. Roger.

10 20 38 43 AB This is Air Boss. I now have Essex in sight; it is about 4 miles away bearing 125. The .3

... The swimmer is now attaching the retriever  
in position ...

10 20 39 16 E Air Boss, this is Essex. Over. We Roger.

10 20 39 23 AB Essex, this is Air Boss. ... main chute down ...  
... about 20 yards. ...